Government of Bengal

Department of Agriculture

Annual Report of the Department of Agriculture Bengal

For the year

1940-41

Part II

Superintendent, Government Printing
Bengal Government Press, Alipore, Bengal
1942

Price—Indian, Rs. 2-12; English, 5s.

Published by the Superintendent, Government Printing
Bengal Government Press, Alipore, Bengal

Customers in the United Kingdom and the Continent of Europe may obtain publications either direct from the High Commissioner's office or through any bookseller.

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PART II.

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I.—ADMINISTRATION.

I held the charge of the section throughout the year. Maulvi Fariduddin Ahmed, Senior Botanical Assistant, went to the Bengal Agricultural Institute being promoted in the Bengal Lower Agricultural Service as a Botanist of the Institute on 11th September 1940. Maulvi Md. Tarikullah, B.Sc., Field Assistant, was temporarily promoted to the post of Botanical Assistant vacated by Maulvi Fariduddin Ahmed on 6th October 1940. Babu Hemshankar Majumdar, Field Assistant, was transferred to Gosaba as an Agricultural Officer of the place, and Babu Chandicharan Banerjee officiated in the post vacated by Babu Hemshankar Majumdar from 14th July 1940 to 13th December 1940. Since 14th December 1940, Babu Shankar Prasad Bhattacherjee is working as Field Assistant being transferred from Dacca Farm to this section.

There was no change in the staff of the Rice Research Station, Horticultural Station and of the Scheme of the Regional Survey of Sugarcane Borers, Dacca Centre.

Leave.—Maulvi M. Qureshi, Additional Entomological Assistant, was on leave from 29th November 1940 to 8th March 1941. No substitute was taken. Babu Jajnabhusan Maulick, Field Assistant, went on leave from 27th January 1941 to 8th February 1941. No substitute was taken.

Tours.—I spent 112 days on tour throughout the year in connection with the experiments conducted by this section on different District Farms, and also at the Rice and Horticultural Stations. The meeting of the Committee of the Advisory Board, Imperial Council of Agricultural Research, India, held in November at New Delhi was attended by me. I attended the Advisory Board meetings representing the Director of Agriculture, Bengal.

My botanical staff spent 156 days on tour in connection with rice, wheat, pulse and fruit experiments conducted at different Government Agricultural Farms.

Receipts.—Total receipts from the sale proceeds of the section including Rice and Horticultural Stations during the year was Rs. 1,655-6.

Research schemes financed by the Imperial Council of Agricultural Research, India.—The Rice Research Scheme, Bengal, carried at Chinsurah and Bankura, will continue till March 1942 under existing system of proportionate share of cost, viz., the pays of one Rice Research Officer and two Botanical Assistants being paid by the Imperial Council and rest by the local Government. The Horticultural Scheme, Krishnagar, will continue till May 1941 on 50: 50 basis. The scheme of the Regional Survey of Sugarcane Borers, Dacca Centre, will continue till September 1941, the entire cost being borne by the Imperial Council of Agricultural Research.

II.—INVESTIGATION.

Research on the improvement of paddies of Bengal was the main work of the section. In addition to this, research on the improvement of wheat, pulse, and fruit culture was also carried. Researches on diseases and pests of some of the important crops and their control have been also undertaken. So investigations carried out in the section are reported below under sub-headings Botanical, Mycological, Entomological.

Botanical investigation.—*Paddies.*—Research on paddy was carried out at the following experimental stations:—

(1) Dacca Farm.

(2) Barisal Farm.

(3) Chinsurah and Gosaba Farms.

(4) Bankura and Suri Farms.

(5) Other District Farms.

(1) Dacca Farm.—Here research on the improvement of highland *aus*, transplanted *aman* and broadcast *aman* (medium deep-water paddy) varieties was continued.

Highland Aus.—*Pure-line cultures.*—Nine-hundred thirty-one classified pure-line cultures were grown according to the main and sub-heads of classification. Observation regarding the maintenance of purity were noted. One-hundred and eight unclassified pure-line cultures were also grown and purity observed.

Selections.—Ten selected strains from pure-lines of high yielding, ten from early types and four fixed hybrids were grown in 5′×5′ plots. Observations as to the yield and other desirable characters were noted—

Preliminary test.	Early types.
Strains	26
Replications	8
	208 plots (1/220th acre each) were randomised in blocks.

The analyses of the results are given in Appendix. Hashikalmi gave the miximum yield but the difference in yield was not statistically significant over those of Saita (65), Boaliasaita (73, 146); P×L(3), Harinmuds (517, 1034), Dhakalam, Motadhan (401, 802), K.P. O (8) and Boalia (250). Last year Boalia (250) stood first. But in both the years the difference in yield between the two strains was not statistically significant.

Tests.—There were two tests—one with early strain and the other with compartively medium and late strains.

(*a*) Early strains	.. ..	5
Replications	.. ..	8
		40 plots (1/80th acre each) were randomised in blocks.
(*b*) Medium and late strains	..	10
Replications	.. ..	8
		80 plots (1/80th acre each) were randomised in blocks.

The analyses of the results are given in Appendix IA. In early strains P × S(8) gave the maximum yield but was not significantly a better yielder than D × L and Boalia 250. In medium and late strains Surjamukhi stood first but it was not significantly a better yielder than Kataktara, Larkoch and Atlai.

Hybrids.—One-hundred and ten hybrid progenies were grown in plots 5′ × 10′. Observations regarding their fixity were noted.

Multiplication.—All the available spaces were utilised for multiplication of recommended strains for the seeds as they are always in great demand in different district farms.

Colchicine Experiments.—Colchicine is a deadly poisonous drug and has been extensively used for doubling of chromosomes in various plants by many investigations for producing polyploids. Doubling of the chromosome number of an individual has got various economic effect. In order to find out the mechanism how the doubling of chromosomes of an individual takes place through the colchicine treatment, considerable cytological studies have been done; but no attempt has yet been made towards the investigation of the physiological changes through colchicine. To investigate the physiological changes of the rice plant caused by the colchicine treatment work was started in 1940.

Seeds of Dharial *aus* paddy, were used in the experiment. The seeds were first treated in corrosive sublimate solution (1:2000 c.c.) for 15 minutes to disinfect them. From these, seeds of uniform size and colour were selected for the experiment and then placed in 1·0 per cent., ·5 per cent., ·1 per cent. and ·05 per cent. colchicine solution for a period of 12, 24 and 48 hours respectively. After treatment they were thoroughly washed and transferred to moist blotting paper in petridishes for germination. For control, seeds previously treated with corrosive sublimate solution, were germinated in water for 12, 24 and 48 hours corresponding to the 12, 24 and 48 hours as done with the colchicine treated seeds. When the seedlings were sufficiently developed, six seedlings were transplanted from each treatment in earthen pots. Data regarding the number of tillers and leaves and measurement of growth in height of the plants were taken every week during their growing period. Data of ear emergence was also taken. The dry weight of the root, straw, ears and

the grains were determined at harvest. Control plants produced lesser number of tillers than those of ·05 per cent. colchicine solution of 48 hours seed treatment and also than those of ·05 per cent. and ·1 per cent. colchicine solution of 24 and 12 hours seed treatment. With increased concentration of colchicine solution the meristematic activity of the plants was diminished as it was evident from the lesser production of tillers. It is seen from the curve of tillering that there is a tendency to increase the rate of tiller production with shorter length of time of treatment with increased concentration of colchicine solution, and also with longer duration of time of treatment with low concentration of colchicine solution (Fig. 1). Flowering was earlier by 7 days in 48 hours' seed treatment in ·05 per cent. and in ·1 per cent. colchicine

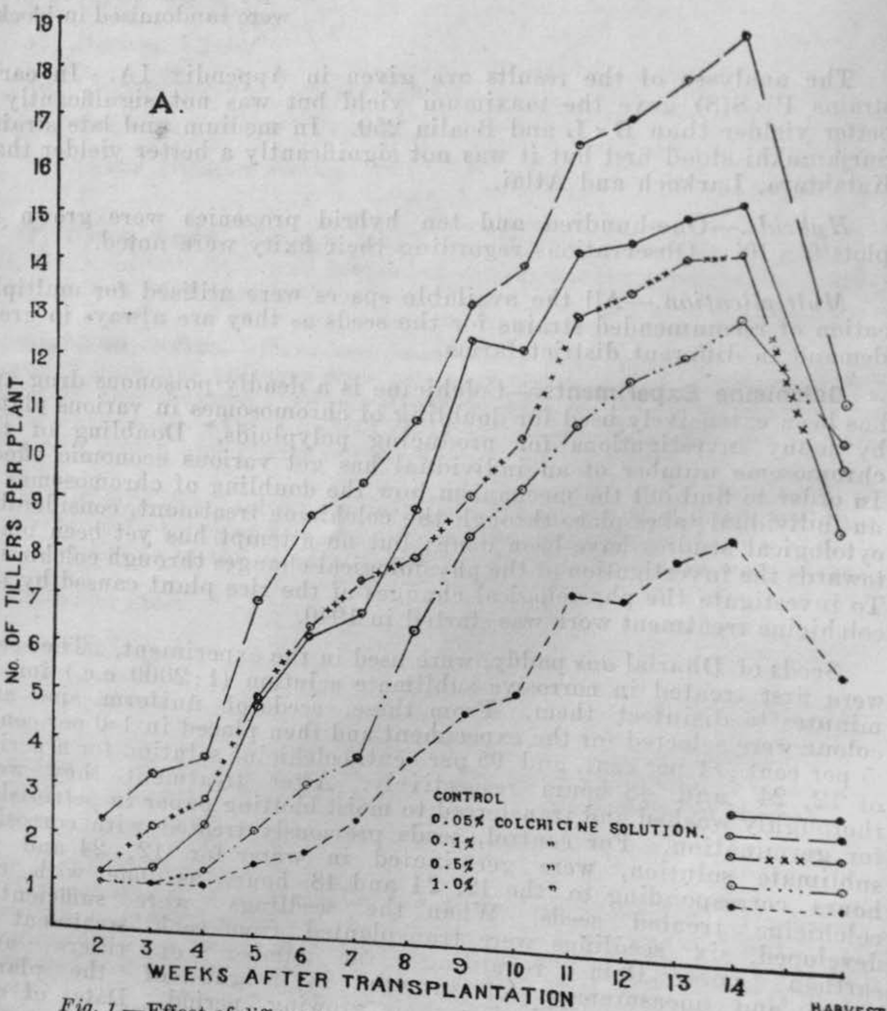
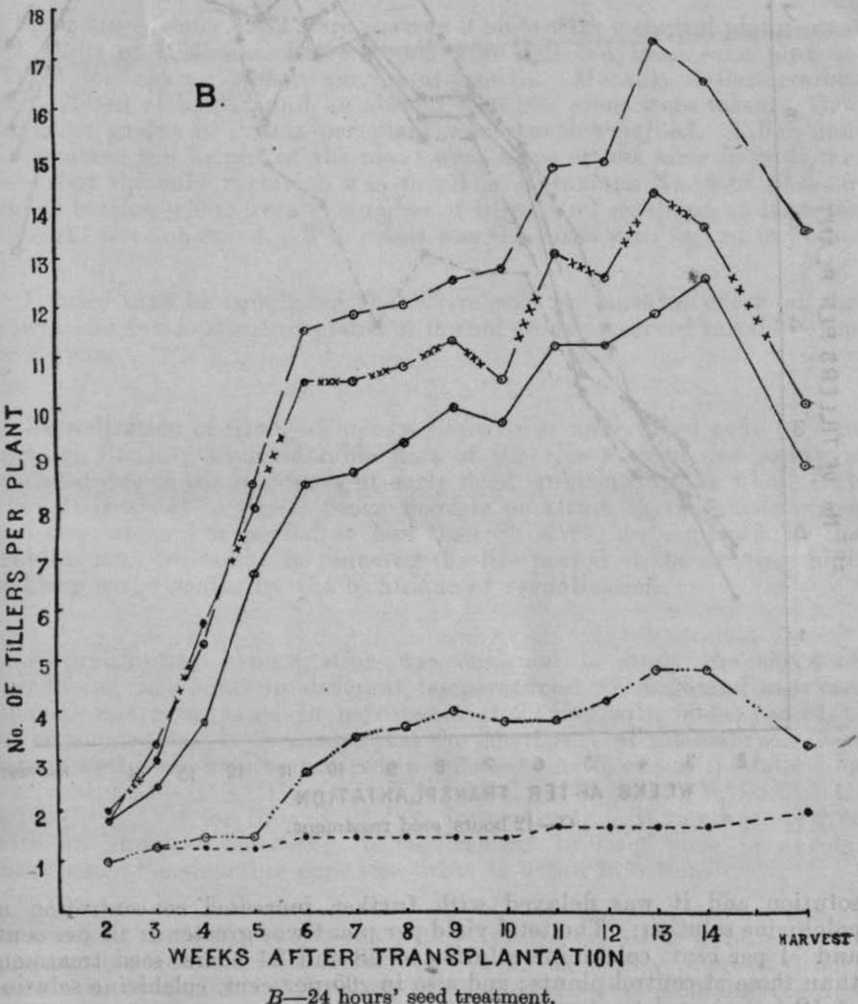
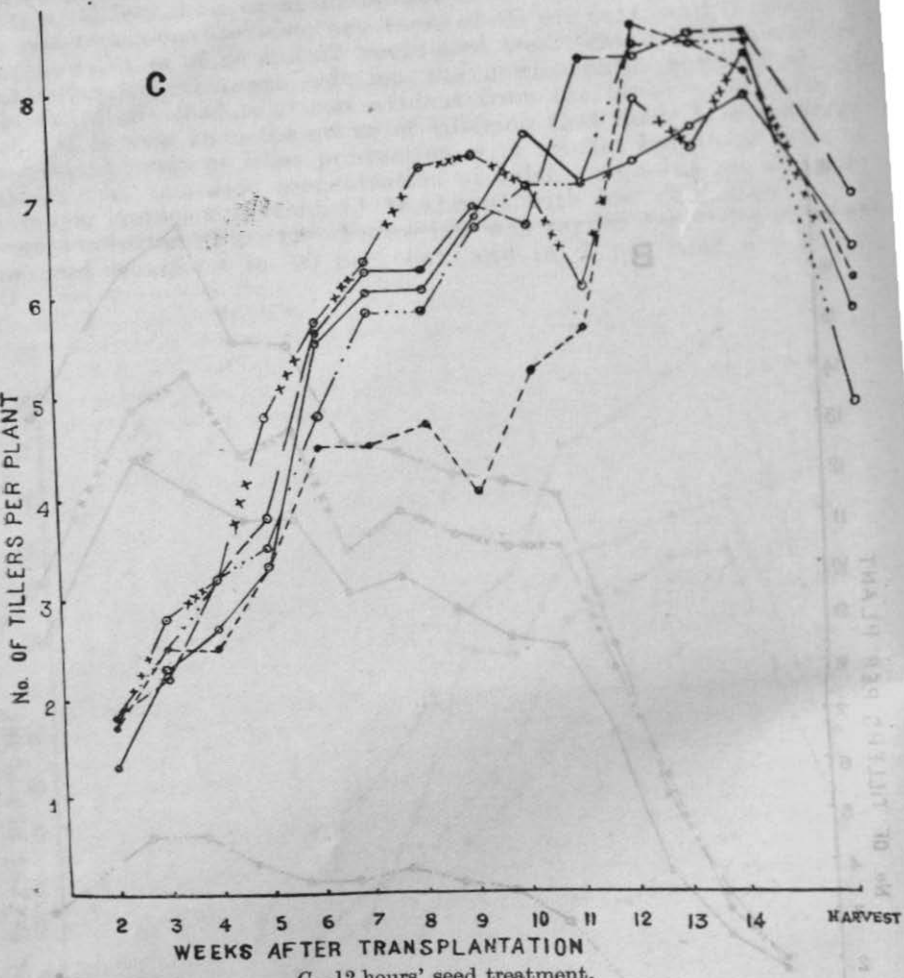


Fig. 1.—Effect of different concentrations colchicine solution on tillering. *A*—48 hours' seed treatment.



B—24 hours' seed treatment.



C—12 hours' seed treatment.

solution and it was delayed with further increased concentration of colchicine solution. The total yield per plant was greater in ·05 per cent. and ·1 per cent. colchicine solution of 48 and 24 hours' seed treatment than those of control plants; and also in ·05 per cent. colchicine solution of 12 hours' seed treatment.

Leaves on the main stem were sampled for each treatment for sugar estimation as they reached maturity. The total and reducing sugar of the leaves are being determined with a view to study the co-relation between the sugar content and the growth of the control and colchicine treated seed plants.

It is intended to publish the results of the experiment in a scientific journal.

Studies on the performance of old seeds of Kataktara aus paddy kept in desiccators and in bottles since 1932.—In previous experiments of storing seeds it was found that the seeds preserved in desiccators and air-tight containers or bottles kept their vitality more or less intact for as long as eight years. The object of the present experiment was to observe the effect of storing seeds for a long period on the growth and development of the plants produced from the same seeds.

Seeds stored since 1932 were sown in 9 plots with a control plot grown with seeds of 1939-40. Fifty plants were selected from each plot at random for taking notes on plant-growth. Monthly tiller count, measurement of height and number of ears per plant were taken. Dry weight of grains in grams per plant was also determined. Tiller and ear numbers and height of the plant were more or less same in both the cases, but the only variation was found in Kataktara No. 4 of 1935-36 kept in bottles, where greater number of tillers and ears, and an increase in height were observed. The result was the same with regard to yield.

It may thus be concluded that there was no harmful effect on the growth and development of plants of the old seeds preserved suitably even for 8 years.

Vernalization of Rice.—The experiment was undertaken as in certain parts of Bengal, a considerable part of the rice crop of *aus* paddy is damaged due to the incidence of early flood, submerging the whole crop when it is about to ripe. Since there is no strain in the existing *aus* varieties whose life period is less than 90 days, an approach to the problem may be sought in reducing the life period of the existing high yielding early strains by the technique of vernalization.

A preliminary investigation was designed to study the effect of vernalizing rice seeds in different temperatures. A highland *aus* var. Dharial was germinated in petridishes at 29′5°C with 55-60 per cent. water per dry weight to ensure just the emergence of the embryo. The germinated seeds were vernalized in different sets to one of the following temperatures:—$0° \pm 1°C$ (V_1 V_2), $11°C \pm 1°C$ (V_3, V_4), $29{\cdot}5°C. \pm 1{\cdot}5°C$ (V_5, V_6) for 15 and 10 days, respectively. Water was sprayed with an atomiser according to requirement to keep them in normal condition. Considerable care was taken to avoid infections.

Seeds of these six treatments with a control set all in equal stage of germination were sown in earthenware pots. A weekly count of tillers, measurement of plant height, and the number of leaves including the top-most mature leaf were taken, the date of emergence of ears, and finally the dry weight of grains were also noted. So far as the number of tillers are concerned a peculiarity observed was the production of a large number of sterile tillers in V_1 set. The percentage of fertile to total tillers in V_1 is 28·05 per cent. as compared with the control of 43·04 per cent. vernalization at 11°C (V_3, V_4) was definitely detrimental to tiller production for both the treatments. The rate of growth in height and the number of mature leaves on the main tiller varied in different treatments from time to time insignificantly.

The average time of ear emergence, total number of ears and the average dry weight of grains in grams are given in the table with the base — Control = 0.

Control-O.

Treatments.	Average time of ear emergence.	Total number of ears.	Dry weight of grains in gms.
0°C—15 days (V_1) ..	—0·01	—1·53	—3·36
0°C—10 days (V_2) ..	—2·56	—1·33	—4·08
11°C—15 days (V_3) ..	—4·71	—1·00	—4·28
11°C—10 days (V_4) ..	—0·10	—1·33	—4·78
29·5°C—15 days (V_5) ..	—12·06	+1·67	+2·46
19·5°C—10 days (V_6) ..	—7·43	+0·50	+1·61

Regarding average time of ear emergence the different treatment responded in the order of V_5; V_6; V_3; V_2; V_4; V_1; C the range of statistical insignificance is denoted by bars above or below. In V_5 the emergence was practically over when it began in the control. The average total number of ears were in the order of V_5; V_6; C; V_3; V_4; V_2; V_1; and the yield of grains V_5; V_6; C; V_1; V_2; V_3; V_4. The yield of grains was thus detrimental on exposures both at 0°C. and 11°C. whereas the exposure at 29·5°C. for both 15 and 10 days tended towards improvement. This leads one to conclude that vernalization at 29·5°C. leads to improvement so far as earliness is concerned without any loss in yield.

Though the results obtained in the experiments are not exhaustive enough for any definite conclusion yet it shows that rice responds to the treatments of vernalization and the beneficial effects is to be sought by vernalizing at higher temperatures.

Transplanted Aman.—*Pure-lines.*—The classified and unclassified pure-lines were grown as usual. Notes taken previously on the botanical and agricultural characters were compared and checked in the field. The total number of classified pure-lines grown during the year under report was 850.

Notes were taken on the botanical character of the unclassified pure-lines for the purpose of grouping them in different classes according to Hector's classification.

Selections.—One-hundred and eleven selected strains from pure-lines were grown and further selections were made from the point of view of high yield and other desirable characters.

Tests.—The following yield trials were carried out during the year under report. The summaries of results are given in Appendix I-B:—

(*a*) Preliminary test of early strains—

Strains	..	.. 14
Replications	..	.. 10
		140 plots in randomised blocks.

Blue-stick and Nagra 41/14 have given the best and the second best yields of grain respectively. There is, however, no significant difference between the two.

(*b*) Preliminary test of medium and late strains—

Strains	..	.. 20
Replications	..	.. 10
		200 plots in randomised blocks.

Aman dhan 20 has come out best with regard to yield of grain, followed closely by Latisail S-22, Bhasamanik and Tilakkacheri, in that order, though the differences between them are statistically insignificant.

(*c*) Preliminary test of hybrid strains against their parents—

Strains	..	.. 14
Replications	..	.. 10
		140 plots in randomised blocks.

J × L 387 $\frac{5}{298}$ (a cross between Jhingasail and Latisail) has stood first giving the maximum yield of grain. It is closely followed by L × D 226 $\frac{1}{105}$ (a cross between Latisail and Dudsar), and Latisail which occupy the next two places. There is, however, no significant difference between them.

Complex Cultural Experiments.—This being the fifth year of the complex cultural experiments all the three were repeated for the last time during the year under report. The designs of lay-out were the same as on previous occasions.

Experiment I.—This is a complex experiment involving three factors on a selected strain of winter paddy—Indrasail (Dacca No. 1) of a medium ripening habit.

The factors taken into consideration are five dates of planting, six different ages of seedlings, and three different numbers of seedlings per hole.

The design of the lay-out was of the split plot type replicated five times in randomised blocks.

The total number of unit plots in the experiment was 450, there being 90 in each block.

The area of each unit plot was 6′ × 6′ = 36 square feet. Seedlings were planted with a uniform spacing of 6″ in all the plots.

A short summary of the results is given below:—

1. *Date of planting.*—The analysis for both grain and straw show that there is a progressive deterioration of yield with the delay in transplantation. Exceedingly poor yields are obtained in the transplantations of September.

2. *Age of seedlings.*—The variance due to different ages of seedlings in both analyses, viz., that of grain and straw, is insignificant.

3. *Seedling number.*—The variance due to seedling number in the case of yield of grain is insignificant. In the case of straw yield, however, it is significant. The local method of planting 3—4 seedlings per hole proves better than two seedlings per hole, the latter in its turn being better than "One seedling".

4. *Inter-actions.*—(*i*) *Date of planting* × *Age of seedling.*—This is insignificant in the case of both grain and straw.

(*ii*) *Date of planting* × *Seedling number.*—This interaction is significant in the case of grain only. In the beginning one seedling per hole gives the highest yield, but with the delay in transplantation no such difference is observed between the three methods.

(*iii*) *Age of seedling* × *Seedling number.*—This is insignificant in both the cases.

(*iv*) *Date of planting* × *Age of seedling* × *Seedling number.*—This inter-action of the second order is insignificant in the case of grain, but is significant in the case of straw at 5 per cent. level.

Experiment II.—This experiment was conducted with a view to finding out the effect of six different dates of planting and three different spacings on the yields of grain and straw of three strains of winter paddy, viz., Latisail, Indrasail and Tilakkacheri.

The lay-out of the experiment was of split plot type replicated three times in randomised blocks. Total number of unit plots in the experiment was 162, there being 54 per block.

The area of each unit plot was $20' \times 9' = 180$ square feet. Age of seedling was uniform for all the three strains for each date of planting. It was five weeks (35 days) from the date following the date of sowing of sprouted seeds in seed-beds.

A short summary of results is given below:—

Date of planting.—The effect of date of planting on both the yields of grain and straw is significant. For grain, the second date of planting (16th July) has given the heaviest yield, although it is not significantly superior to the first date of planting. In the case of straw, however, the first date of planting has given the heaviest yield. The yield gradually diminishes with the delay in transplantation.

Spacing.—As on previous occasions the best result for both grain and straw has been obtained with 6″ spacing, 9″ comes next, and 12″ is the poorest of all.

Variety.—The analyses of variance show that the primary effect of varieties is not significant in either of the cases.

Inter-actions.—(*i*) *Spacing* × *Date of planting.*—This inter-action significant for both grain and straw yields. First date of planting gives the heaviest yields for both with 6″ spacing.

(*ii*) *Spacing* × *Date of planting* × *Variety.*—The second order inter-action is not significant in either case.

Complex Experiment III, 1939-40.—The experiment was conducted to study the effect of two cultural factors, viz., four different spacings and two different numbers of seedlings per holes on two strains of winter paddy—Latisail and Tilakkacheri. The strains differ from each other in the period of maturity, the former being an early maturing strain and the latter a late maturing one.

The effect was studied with regard to the following characters:—(*i*) yield of grain, (*ii*) yield of straw, (*iii*) number of fertile tillers per plant, (*iv*) number of sterile tillers per plant, (*v*) length of inflorescence, (*vi*) number of spikelets per tiller, (*vii*) ratio of full grains to unfilled grains, (*viii*) the size and shape of grains, (*ix*) height of plant, (*x*) extent of exertion and (*xi*) weight of 100 grains.

The lay-out of the experiment was of split plot type, replicated four times in randomised blocks.

Total number of plots for the whole experiment was 64, there being 16 per block. The area of each unit plot was $9' \times 9' = 81$ square feet. Age of seedlings was uniform for both the strains in all the plots. It was five weeks from the date following the date of sowing of sprouted seeds in seed-beds.

A summary of the results is given below:—

(*i*) *Yield of grains.*—Spacing has a profound influence on the yield of grain. 15″ spacing gives the heaviest yield, followed by 12″, 9″ and 6″. There is a definitely progressive increases in yield from 6″ to 15″ in both the varieties.

The effect of variety is also significant, Latisail being a better yielder than the other.

(*ii*) *Yield of straw.*—In this case the effects of all the factors are highly significant. Straw yield increases as spacing is increased, 15″ spacing giving the maximum yield.

Tilakkacheri is superior to the other variety with regard to yield of straw.

Of the two different numbers of seedlings per hole, one seedling gives lower yield of straw, than the local method, viz., 3-4 seedlings per hole.

The inter-action between varieties and spacing is significant, 15″ and 12″ spacing giving heavier yields of straw in the case of Tilakkacheri.

(*iii*) *Number of fertile tillers.*—Spacing, variety and number of seedlings are significant. 15″ gives the largest number of fertile tillers followed by 12″, 9″ and 6″ in both the cases. Latisail has a large number of fertile tillers than Tilakkacheri.

Of the two methods of planting the local method (3-4 seedlings per hole) gives a larger number of fertile tillers.

(*iv*) *Number of sterile tillers.*—6″ spacing gives the least number of sterile tillers, 12″ and 15″ the heaviest.

Method of planting (number of seedlings per hole) has no effect on the number of sterile tillers.

Latisail has more sterile tillers than Tilakkacheri. The inter-action between varieties and spacing is significant. 9″ gives the largest number of sterile tillers in Tilakkacheri and 15″ in Latisail.

(*v*) *Length of inflorescence.*—Spacing and variety are significant. 15″ spacing gives the greatest length in both the varieties. In Tilakkacheri the inflorescence is significantly longer than in the other variety.

(*vi*) *Number of spikelets.*—Spacing, variety and number of seedlings are all significant. 15″ spacing gives the largest number of spikelets. Tilakkacheri gives a higher number of spikelets than the other variety. As regards the method of planting, single plant per hole is better in both the varieties.

15″ gives the largest number of spikelets with Tilakkacheri and 15″ and 12″ with Latisail.

(*vii*) *Ratio of full grains to unfilled grains.*—Effect of varieties only is significant, Tilakkacheri being superior to Latisail.

(*viii*) *Size and shape of grains.*—Variance due to varieties only is significant. Tilakkacheri has larger grains.

(*ix*) *Height of plant.*—Tilakkacheri is taller than Latisail. The local method of planting gives a height which is barely significantly greater than that with one seedling per hole.

(*x*) *Extent of exertion.*—Latisail is superior to Tilakkacheri. Local method of planting is decidedly better than "one seedling".

(*xi*) *Weight of 100 grains.*—Effect of variety only is significant. Grains of Tilakkacheri are heavier than those of Latisail.

The effect of weeding on the yield of grain and straw of transplanted aman paddy.—The experiment was repeated for the third time during the year under report. It was conducted as on previous occasions with only one strain of winter paddy, viz., Tilakkacheri, and the following were the treatments:—

(*i*) Weeds allowed to grow.

(*ii*) Weeding once (30th September).

(*iii*) Weeding twice (30th September and 30th October).

(*iv*) Weeding thrice (30th September, 30th October and 30th November).

The treatments were replicated eight times in randomised blocks. There were, therefore, 32 plots in all.

A summary of results is given in Appendix I-B.

As regards the yield of grain, there was no significant difference between the three treatments where weeding was done. "No weeding", however, proved significantly inferior to each of them, *i.e.*, treatments with weeding.

In case of straw yield, the results are different from the above and are rather peculiar. Though "one weeding" was significantly better than the all other treatments, the difference between any two of the latter was insignificant.

Experiment to determine the deterioration of strains.—It is a very common complaint that a strain "runs out" or deteriorates after it has been grown for some time in a place.

The experiments were conducted to study the deterioration, if there was any, in a few strains of paddy grown for a number of years in different district farms.

Two simple experiments were laid out in randomised blocks at Dacca to compare the yielding capacities of two strains of winter paddy:—Dudsar and Indrasail—both grown from seeds of different district farms, viz., Dinajpur and Rajshahi (grown there for a number of years) with the same grown from seeds of the Botanical Section. In each experiment the same strain from different farms formed the different treatments.

A summary of results is given in Appendix I-B. In both the cases the differences between the treatments were insignificant.

Hybridization.—Selected strains of the following old crosses were grown along with their parents for further observation regarding fixity of desired characters:—

(*i*) Dadkhani × Indrasail.

(*ii*) Dadkhani × Tilakkacheri.

(*iii*) Tilakkacheri × Indrasail.

(*iv*) King George × Dadkhani.

(*v*) Jhingasail × Latisail.

(*vi*) Latisail × Dudsar.

(*vii*) Dudsar × Patnai.

(*viii*) Indrasail × Patnai.

Quasi-Factorial Experiment.—This experiment was conducted in 1939-40 and was afterwards repeated during the year under report. There were 81 selected hybrids in the experiment. The design of the lay-out was exactly like that of the previous year and the nature of arrangement was "partially balanced incomplete randomised blocks", there being 36 blocks with 9 strains in each.

The number of groups was four, viz.—

(*i*) Rows.

(*ii*) Columns.

(*iii*) Orthogonal square (*i*).

(*iv*) Orthogonal square (*ii*).

The results are being analysed and will be reported next year.

Broadcast Aman (Deep-water Paddy).—*Collections.*—Fifteen varieties from Dacca district and 11 varieties from Faridpur district of medium deep-water paddy were collected in the year 1939-40 from the standing crops of that year. Seeds of single ear of these were grown for establishing pure-lines from them in the year under report. Among collections from Dacca district two strains have been found to be early ripening varieties flowering in the third week of August, seven varieties completing flowering in September and the remaining 6 varieties completing by 1st week of October. All the Faridpur collections completed flowering between the 1st and the 16th October.

All the cultures except two bred pure so far as the botanical characters are concerned, which have been recorded as usual.

Unclassified pure-lines.—Three hundred and seventy-nine pure-lines cultures of medium deep-water paddy were grown in Block A of the lowland in the Institute area.

In order to find out the rate of growth of the strains during the flood period in response to the rise of water level, 5 single plants from each pure-line culture, were selected at random and their growth was measured at interval of 5 days beginning from the 1st May up to 29th October, 1940.

On 27th July 1940 rain water began to accumulate in the field from which date water height at 5 different places of the field was measured and on 2nd August 1940 flood water from outside began to enter into the area. This flood water rose gradually up to 39 inches then began to fall gradually till the date 9th August 1940. Occasiōnal rise and falls were observed but those were not so significant.

From these data the rate of growth of the pure-line cultures during flood, *i.e.*, from pre-flood period to the post-flood period was worked out for each strain and compared for selecting out strains having the capacity to grow quickly along with flood.

The range of flowering and the date of ripening were also noted for each strain.

Botanical notes were taken of a single plant from each strain and purity was closely observed.

Selected strains from the pure-lines.—Twenty-four selected strains from pure-lines were grown in Block D. In this case also the lengths of five single plants, selected at random from each strain, were measured from 17th August 1940. These measurements were taken after every four days. In this block also, water depth was measured every day. From these data the average growth of the plant per day, the maximum height and the rate of growth during the rise of water depth were calculated for each strain. The highest plant recorded was 94·1 inches long in the variety "Chain-gair".

Six single plants from each strain were kept in ears and remainings were harvested plot by plot and the yield was recorded separately. As regards the yield, the following three varieties are worthy mentioning to be 1st, 2nd and 3rd, respectively:—

(1) Panalur.

(2) Betha *aman.*

(3) Lata monar.

From the flowering notes it is seen that all the strains are medium or late.

Test of selected strains.—A comparative test was done with the following five promising selected strains in Block B arranged with 6 replications in randomised blocks:—

(1) Baish bish.

(2) Gabura.

(3) Gutak.

(4) Lalkanai

(5) Dulia.

In this case also records were made of plant heights, water depth, etc., in all sub-plots as done in the pure-line strains.

From the records the average rate of growth per day, growth in relation to rise of water depth and maximum height for each strain were calculated.

It is necessary to determine statistically the significance between the mean growth at different periods. In the present study, although there is significant difference of growth in different periods, it could not be said at this stage, whether the difference is due to change of water depth, or to the age of the plants.

A varietal test of the following strains was conducted in the Malda Farm this year:—

(1) Dulia.
(2) Gutak.
(3) Lalkanai.
(4) Baish bish.
(5) Local sungail.

The analyses of result may be seen in Appendix I-C.

(2) **Barisal Farm.**—The work on the improvement of Balam paddies was continued here.

As on the previous occasions the pure-lines and other selected strains were grown during the year under report for further studies. There were 260 pure-lines in all. The varietal trials were conducted, one with 24 strains and the other with 5 strains in long strips. The analyses of results are given in Appendix I-B.

In the first trial Patnai 7 has given the best yield of grain followed by Chingribhusi No. 12. All the Patnai strains have, as is evident from the summary of results, proved to be better yielders than almost all the Balam strains. Of the latter, strains of Chingribhusi have given the best grain yield.

In the trial with 5 strains Chingribhusi No. 5 gave the highest yield of grain (28·15 maunds per acre) followed by Khiraijali No. 8 (27·54 maunds per acre) the cultivators' varieties yielding less than both these strains. There is, however, no significant difference within the Balam paddies themselves in this experiment. The only significant difference has been obtained between the Balam strains on the one hand and the Patnai strain (Patnai 23) on the other, the latter giving the minimum yield of grain.

The strains of salt-resultant paddy from Hongkong and Nigeria, introduced last year in the pure-line cultures were grown during the year under report. They were multiplied at Charbadna Farm on the river bank as was done in the previous year.

(3) **Chinsurah (Rice Research Station) and Gosaba Farms.**—
(*i*) *Botanical study and isolation of pure-lines.*—Botanical study and isolation of pure-lines were continued. The total number of cultures during the year was 1,983 of which 1,741 were established pure-lines.

(*ii*) *Combined varietal and nitrogen and phosphate experiment.*—The experiment was started during the year 1939-40 and it has been repeated *in situ* during this season. It is a three-fold complex experiment with 3 levels of Nitrogen (0 lb., 20 lbs. and 40 lbs.), 3 levels of Phosphoric acid (0 lb., 20 lbs. and 40 lbs.) and 3 varieties of rice (Bhasamanik, Patnai 23 and Latisail).

Bhasamanik and Latisail have given practically identical grain yields and they are statistically superior to Patnai 23 but with regard to straw there is no difference in mean yield between the three strains. The improvements in yield of both grain and straw due to appplication of 20 lbs. and 40 lbs. of nitrogen per acre in the form of ammonium sulphate, have been found to be definitely significant. There is however no significant improvement in mean yields of grain and straw due to application of 20 lbs. of phosphoric acid per acre in the form of superphosphate but there has been definite improvement in mean yields of grain and straw due to application of 40 lbs. phosphoric acid per acre (Appendix I-D).

(*iii*) *Study of the effect of green manuring with Dhaincha (Sesbania sp.) on the yield of rice.*—The experiment has been started during this season in order to study the effects of green manuring with Daincha grown *in situ*, on the yield of two strains of paddy, *e.g.*, Bhasamanik and Patnai 23. Bhasamanik and Patnai 23 have given practically identical grain yields but with regard to straw yield Bhasamanik has been found to be statistically superior to Patnai 23. With regard to both grain and straw by far the highest yields have been obtained with green manuring and they are significantly superior to "No manure" treatment. The grain yields of Bhasamanik and Patnai 23 have responded more or less similarly to green manuring, whereas with regard to straw yield the response of Bhasamanik to green manuring is much more than Patnai 23 and the difference is definitely significant.

(*iv*) *Study of the effects of age of seedling and date of planting on the yield of rice.*—The experiment was started during the year 1936-37 and it has been repeated *in situ* for the fourth time during this season. It is a threefold complex experiment with five ages of seedling (3 weeks, 5 weeks, 7 weeks, 9 weeks and 11 weeks), five dates of planting (July 14, July 29, August 13, August 28 and September 12) and two varieties of rice (Bhasamanik and Bhasakalma). Unfortunately, a large number of plots all in the fifth planting, were damaged and the result of the experiment neglecting the fifth date of planting is presented here. The first date of planting (July 14) gives the highest grain yield is significantly superior to third (August 13) and fourth (August 28) dates of planting. Second (July 29) and third (August 13) dates of planting have given practically identical yields and both of them are statistically superior to fourth date (August 28) of planting. Bhasamanik has given the highest grain yield for the first date of planting (July 14) and is significantly superior to all other dates of planting, while Bhasakalma has given practically identical yields for the first three dates of planting and are significantly superior to the fourth date of planting. Seven weeks and nine weeks old seedlings have given identical yields with Bhasamanik and they are significantly superior to three weeks and five weeks old seedlings only. With Bhasakalma, however, the highest yield has been obtained with seven weeks old seedling and is significantly superior to all other ages of seedling.

(*v*) *Study of the effects of irrigation on the yield of rice*.—The experiment was started during the year 1937-38 and it has been repeated for the fourth time during this season. It is a two-fold experiment with two irrigation treatments and two varieties.

"Irrigation" and "No irrigation" treatments have given practically identical grain yields and there is nothing to choose between them. The difference in mean grain yield between the two varieties is also insignificant.

(*vi*) *Study of the effects of "Jhanji" (charophyte weed) on the yield of rice*.—The experiment was started during the year 1938-39 and it has been repeated for the third time during this season. It is a simple experiment and consisted of two treatments only, *e.g.*, (1) weeding of "Jhanji" and (2) no weeding "Jhanji". There is no difference in mean grain yield between the two treatments.

(*vii*) *Hybridization*.—Eight economic crosses of varying generations have been studied and three homozygous types of good quality and yield have been selected from the hybrid—"Latisail × Blue Rose," which will be put to yield test during the next season.

(*viii*) *Varietal tests*.—Seven varietal tests at Chinsurah Farm and two varietal tests at Gosaba Farm have been conducted during this season. The analyses and summary of the results are shown in Appendix I-D.

(*ix*) *Selection*.—Two quasi-factorial experiments with partially balanced arrangements have been conducted during this season with 49 Patnai strains and 81 *aman* strains other than Patnai varieties. The data of the experiments are being analysed and the result will be communicated in due course.

(4) **Bankura (Rice Research Station) and Suri Farms.**—The pure-line and new collection cultural plots at Bankura Farm were 1,228 against 1,057 in previous year. Usual notes on Botanical and other characters were recorded. Weight of 25 plants was also recorded. Single plant selection of types from splitting plots was continued.

Selection series experiments at Suri Farm comprising of two groups of eight strains each in each of the four situations, were continued as in previous years with some alterations in treatments. The results obtained for the higher situation agree, more or less, with those of the previous year. Those of other situations vary much. The year was abnormal in weather conditions and the results are unreliable (Appendix I-E).

The semi-final yield trails in four situations at Suri Farm were continued. There was some reshuffling of treatments in some of the situations and some treatments were replaced by others also. The results of the 1st situation agree with those of previous years. The other three situations give varying results and the experiments as reshuffled will be continued (Appendix I-E).

Study of Hybrids (Suri Farm).—There were five races of hybrids at the Suri Farm. They were (1) Kataktara × Bhasamanik, (2) Blue Rose × Latisail, (3) Latisail × Manikkalma, (4) Latisail × Bhasamanik and (5) Bhasamanik × Manikkalma. Of these the first two were in the sixth generation and the other three were in the seventh generation.

(3) *Latisail × Manikkalma.*—Both the parents are higher yielding late *aman* but Latisail is a coarse-grained, short statured but strong-strawed race. Manikkalma is a long-statured plant with good quality of grain. The idea was to combine the good qualities of grain and straw of these two parents in the progeny. The hybrid is in the seventh generation and several fixed types of very desirable quality have been isolated. Further selection is being continued on the basis of yield, length of straw, strength of straw, tillers and quality of grains. It is expected that a yield trial of the fixed types will be undertaken not only amongst the types but also with other hybrids also.

(4) *Latisail × Bhasamanik.*—Both the parents are late *aman.* In West Bengal Bhasamanik yields much higher than Latisail but the strength of straw and tillering capacity of Latisail is better than Bhasamanik. Quality of rice of Bhasamanik is better than Latisail. To combine the yield, length of straw and quality of grain of Bhasamanik with the strength of straw of tillering capacity of Latisail they were crossed. The progeny is in the seventh generation and selection on the basis of the desirable economic characters is continuing. The fixed types obtained do not all combine the desired characters. So the still splitting ones are under study.

(5) ***Bhasamanik × Manikkalma.***—Bhasamanik is a better yielder than Manikkalma. The grain quality and the length of straw of Manikkalma is famous. The hybrids are in the seventh generation. We have isolated a few types by selection which appear to be fixed and which have the desired characters of both parents. Selection for still higher yield is still going on.

Two yield trials with five strains in each were undertaken as in previous year at the Sriniketan Farm of the Viswa Bharati Institute at Bolpur. There was one change in treatments in the early group. The two years' results do not agree. The year was abnormal and the experiments should be repeated.

A green manuring experiment at Suri Farm is being conducted for some years by the Economic Botanist and the Agricultural Chemist jointly. Green manuring with cowpea (Vigna catiang) gives significantly higher yield of paddy crop than the control.

The four preliminary yield trials (New series) at Bankura Farm were repeated as in the previous year. The results do not agree. They will be continued without change (Appendix I-E).

Four semi-final yield trials at Bankura Farm were repeated. The results in the first two situations agree with those of previous year. The two lower situation experiments will be repeated (Appendix I-E).

The scented paddy yield trial was repeated as in last year. Gandhamalati again stands first. Bansmati maintains its position. Randhunipagol has gone down (Appendix I-E).

A complex manurial experiment comprising of three factors with four replications was repeated as in the previous years without any change in lay-out and treatments. The design was of the latest technique. The results obtained agree more or less with those of last year. Nitrogen manuring in the form of ammonium sulphate is effective in increasing the yield of paddy crop but phosphoric acid does not show the same result. Last year the second and third order inter-actions were insignificant but this year one of them is in the significant level (Appendix I-E).

A complex cultural experiment with three factors was repeated as in the last year without any change in design and treatment. The analysis of variance shows the same result as in last year. None of the three levels of weeding as well as the three levels of hoeing is significant. The inter-actions also do not show any significance. The effects of both weeding and hoeing are, however, more prominent this year than those obtained last year (Appendix I-E).

Storage and viability experiment was continued. Seeds of both *aus* and *aman* treated in 1936 with various chemical as well as control and stored in glass jars, with lids made airtight with vaseline maintained their germination up to August 1940. They were transplanted in both field and pots in 1940 and the seedlings behaved like seedlings from fresh samples. They have lost germinations capacity in March 1941. Samples of similar treatment in 1937 are still germinating like fresh seeds. The other storage treatments were ineffective in maintaining viability beyond a season (Appendix I-E).

Study of Hybrids at Bankura Farm.—There were five races of hybrids at Bankura of which two were in the sixth generation and three were in the seventh generation. They were—

(1) Latisail × Blue Rose,

(2) Latisail × Manikkalma,

(3) Bhasamanik × Manikkalma,

(4) Latisail × Bhasamanik, and

(5) Bhasamanik × Kataktara.

Detailed reports on each are given below:—

(1) Latisail × Blue Rose.—A report on this hybrid was submitted to the Imperial Council of Agricultural Research as the study is a part of the genetical work undertaken under the grant of the Imperial Council of Agricultural Research.

(2), (3) and (4).—These crosses were done in 1933-34 and the progenies are in the seventh generation. They were subjected to a process of selection on the basis of yield, tillering capacity, quality of grain, flowering duration, height and strength of straw, etc. As the result of selection nine types of hybrid No. (2), one type of hybrid No. (3) and one type of hybrid No. (4), were isolated as breeding pure. They were tested for yield of grain with four replications with Bhasamanik parent which was the best yielder of the three parents. The result of analysis of yield of grain shows that only three types are above Bhasamanik but the difference is not significant. They are (1) Latisail × Bhasamanik, (2) Latisail × Manikkalma 166, and (3) Latisail × Manikkalma 368. The study is still continuing and if any are found superior to Bhasamanik in all respects, they will be multiplied for distribution.

(5) *Bhasamanik × Kataktara.*—The first parent is a late *aman*, while the second parent is an *aus*. The crops was made in 1934 for studying the inheritance of earliness in the progeny. Form the third generation study was confined to economic characters. It was long felt that most of existing early *aman* strains lack in high-yielding capacity. This hybrid was expected to give out early types of *aman* with higher yield. The study is continuing and promises to be encouraging.

(5) **Other District Farms.**—There were altogether 14 district farms where field tests of the improved strains of *aus* envolved by the section were conducted against the best of the local variety of the district.

The improved *aus* strains stood first in eleven farms, while the local strains headed the list in the remaining farms, *i.e.*, in Burdwan, Comilla and Faridpur. The analyses of the results of all *aus* tests conducted at different district farms are given in Appendix I-A. Short notes on the performance of different departmental strains included in the trials are given below.

Dharial.—It was tested in Rangpur, Dinajpur, Pabna, Maynaguri, Berhampore, Comilla, Mymensingh and Dacca. It stood first in the first four farms. The increase of grain percentage of the strain over the respective local variety has been 53·67, 31·00, 43·94, 25·84, respectively.

Marichbeti.—It was tested in Berhampore, Rajshahi, Malda, Rangpur, Bogra, Dinajpur, Pabna, Faridpur, Comilla, Krishnagar and Dacca. It stood first in the first two farms. There was a difference of 20·62 between the grain percentage of this and the local Marichbeti at Rajshahi.

P×S (8) was tested in Krishnagar, Dacca, Malda, Rangpur, Pabna, Faridpur, Comilla, Mymensingh and Rajshahi. It stood first in the first two farms.

D×L (28) stood first in Malda Farm. The difference in grain percentage between the strain and the local paddy was found to be 53·87.

Kumari was tested in Bogra, Maynaguri, Berhampore and Dacca. It stood first in Bogra.

Kataktara was tested in Mymensingh, Dinajpur, Maynaguri and Comilla Farms. It stood first in Maynaguri.

The total yield of *aus* paddy per acre was very meagre this year in most of the districts, mainly due to the insufficiency of rain. Nevertheless Rangpur, Mymensingh and Pabna Farms showed good results this year. Dharial gave 31·72 maunds per acre, Kataktara 30·40 maunds per acre and Dharial 32·85 maunds per acre in the above farms, respectively.

As usual a number of varietal trials of improved transplanted *aman* strains were conducted by this section on different district farms with a view to find out the most suitable strain for a particular locality. There were 4 trials in the Eastern Circle, 1 in the Western and 7 in the Northern Circles. Of the last seven the one at Rangpur had to be abandoned for scarcity of rain. The analyses of results of all the trials are given in Appendix I-B. In all the districts with the exception of Dacca and Jalpaiguri the departmental strains of paddy have given better grain yields than the best variety of the respective localities. At Dacca and Jalpaiguri the local varieties Malati and Agandali respectively have given slightly better yields of grain. There is, however, no significant difference between these strains and the good departmental ones in both experiments.

Short notes performance of the different departmental strains included in these trials are given below:—

Bhasamanik.—It has stood first in the districts of Bogra, Dinajpur, Rajshahi and Mymensingh. The increase of grain percentage of Bhasamanik over that of the respective local varieties have been 9·48, 12·03, 52·77, 25·60, respectively.

At Dacca and Jalpaiguri the local varieties have yielded slightly better than Bhasamanik, although there is no significant difference between them in either case.

Indrasail.—Though this strain could not stand first in any trial, it fared quite well in almost all the cases where it was included.

Boldar.—It was included in only one trial (Rajshahi) where it gave the highest yield of grain, there being as big a difference as 73·44 between the grain percentages of this and the local variety.

Jhingasail.—It has stood first at Burdwan and second at Bogra. At the former place it has given a very good yield of grain, viz., 31·50 maunds per acre.

Latisail.—It has not given the best yield in any trial, although its grain yield has been fairly good in all the cases where it was included. The maximum yield (31·31 maunds per acre) has been obtained at Dinajpur.

Dudsar.—It was included in as many as six trials, but it has fared badly in all excepting only one, where it has stood second. The maximum yield (31·13 maunds per acre) has been obtained at Dinajpur. In spite of such a high grain yield it has proved worst of all the varieties in this trial this year.

Nagra.—It has stood second at Dinajpur, yielding more than the local. The difference between its grain percentage and that of the local variety has been 5·16.

D×I.—It has fared well at Dacca and Rajshahi Farms, standing second at both the places.

Tilakkacheri.—It was included in only one trial, viz., the one at Comilla, where it has given the highest yield of grain (29·50 maunds per acre). The difference between its grain percentage and that of the local variety has been 16·53.

Wheat.—Experiments were conducted on this crop at four different places, viz., Rajshahi, Pabna, Malda and Berhampore Farms. All the purelines of wheat numbering 40 were grown on each of the three farms in the Northern Circle. Notes were taken on these strains for making selections from the point of view of high yield and other desirable characters.

The following varietal tests were conducted with the object of finding out the most suitable variety for each locality :—

The results of the test are given in Appendix II.

(*i*) Rajshahi Farm—

Strains	7
Replications	6
	42 plots of 1/132nd acre each in randomised blocks.

All the Pusa types of wheat have done better than Jamali 24 and Gangajali 50. P. 52 has given the heaviest yield of grain (32·48 maunds per acre) followed closely by P. 90. There is, however, no significant difference between the strains P. 52, P. 90, P. 80-5 and P. 6 which have got the first four consecutive places. Gangajali 50 has fared worst of all, although the yield has been fairly good (21·84 maunds per acre).

(*ii*) Pabna Farm—

Strains	.. ..	9
Replications	.. ..	6
		54 plots of 1/186th acre each in randomised blocks.

The yield of grain of all the strains in this experiment has been quite low. This was due to the bad condition of the plot of land in which the experiment was conducted. P. 52 proved best of all, the yield being only 14 60 maunds per acre, followed by C. 951, Jamali 24, P. 6, P. 190 and C. 518 in that order. There was, however, no significant difference between them.

(*iii*) Malda Farm—

Strains	.. ..	7
Replications	.. ..	6
		42 plots of 1/186th acre each in randomised blocks.

As the germination of one of the treatments, viz., P. 6 was extremely poor in all the six blocks, the result of the experiment could not be statistically analysed. The yields per acre of the remaining six treatments were however calculated. Jamali 24 has yielded the maximum amount of grain (23·71 maunds per acre), followed closely by P. 52 (22·78 maunds per acre). As in the previous year P. 80-5 has given a very low yield (8·32 maunds per acre).

(*iv*) Berhampore Farm—

Strains	.. ..	7
Replications	.. ..	6
		42 plots of 1/132nd acre each in randomised blocks.

The experiment at Berhampore was in all respects (including the size of the plots) exactly like that at Rajshahi. The results of this are being analysed and will be reported next year.

Pulses (Phaseolus Sp.).—The Kalai and Mung pure-lines were grown on the Krishnagar Farm as in the previous years. The varietal test of Kalai which was first conducted last year was repeated during the year under report. There were in all 12 strains in the test. Plots were 1/363rd acre each replicated 6 times in randomised blocks. The analyses of results are given in Appendix III. The best yield has been obtained from strain 31/NC (4·54 maunds per acre) which is followed by strains 72/XIV, 65/8 and 64/X in that order; the differences between them are, however, statistically insignificant.

Fruit culture—Dacca Farm.—*Mango.*—A few of the best varieties of Murshidabad district has been added to our collections which have not yet flowered. Budding of mango was taken up but failed. Enarching was done, as usual, in connection with collection of varieties and the percentage of success was satisfactory.

Litchi.—Two varieties from the Horticultural Station, Sabour, and six variesties from the garden of Nafar Pal of Krishnagara have been added to our collection. The plants are doing well but have not yet flowered. A number of gooties were made in connection with outside supplies as in previous years.

Guava.—One variety from Horticultural Station, Krishnagar, *e.g.*, seedless and 4 varieties from Shaharanpur Botanical Garden were added to our collections. All the plants fruited. The quality and size of the fruits of Shaharanpur Botanical Garden are better than that of the seedless variety of Krishnagar.

Propagation of the best varieties by marcottes was done as usual.

The pruning of branches to induce a heavy yield did not succeed.

Citrus.—The citrus fruits consist of the following varieties:—

(*a*) Pomelo, (*b*) sweet lime, (*c*) seedless *kagchi*, (*d*) grape fruit, and (*e*) an orange from the Shaharanpur Botanical Garden.

All the citrus plants are doing well except grape fruits and oranges obtained from Shaharanpur Botanical Garden which did not prove successful and as such these were uprooted. Pits were made ready for planting with the best orange plants obtained from Nagpur.

The root opening of old pomelo trees was carried out. Manures consisting of ammonium sulphate, sulphate of potash, bonemeal, lime, cowdung, leaf mould, etc., were applied to 10 trees except plant No. 12 which has been kept as control.

Propagation by gooties was also done.

Tung oil (Aleurites and Montana).—Thirty-nine seedlings raised in the Botanical Gardens were transplanted in Mostertak, Dacca Farm, according to the triangular method of layout, in June 1940.

These plants shedded leaves in November and again in March.

Work on Horticulture has increased considerably and the necessity for additional staff is badly felt without which efficient work and good results cannot be expected.

Bankura Farm.—This was the third year of the growth of the following fruit plants grown on the farm:—

I.	(*a*) Citrus ..	.. 113
	(*b*) Gauvas ..	.. 50
	(*c*) Litchi ..	.. 8
II.	Queen pineapple suckers	.. 600

I. (*a*) *Citrus.*—The citrus consists of the following varieties:—

(1) Pomelo	... 39
(2) Seedless *kagchi*	... 50
(3) Eureka Limes	... 12
(4) Nagpur orange	... 12

The growth of all the citrus plants was quite satisfactory and in some cases it was rather vigorous. Among the citrus plants, the seedless *kagchi* produced fruits this year. The size of the fruits was quite big, and so far all the fruits have been found to be seedless.

Pomelo, Eureka limes and Orange plants have not yet flowered.

(*b*) *Guava.*—The growth of the plants was excellent. The varieties were Harijha, Benares, Allahabad, Seedless and Dacca Farm. All the plants bore fruits. The seedless guava proved to be the best of all at Bankura.

(*c*) *Litchi.*—Most of the plants died due to the severe attack of white ants and the rest could not withstand the excessive drought.

II. *Queen pineapple.*—About 600 suckers obtained from Kalimpong Farm were put in a small area.

Suri Farm.—This was the second year of the growth of the following fruit trees on the farm:—

(*a*) Pomelo	..	.. 92
(*b*) Guava	..	.. 36
(*c*) Litchi	..	.. 8

(*a*) *Pomelo.*—The growth of the plants was promising. No plant flowered during the year.

(*b*) These are doing well and almost all gave flower flushes during the season. These flower heads were taken off.

(*c*) *Litchi.*—There were 21 trees in this area. The growth was rather satisfactory in comparison to the plants grown at Bankura Farm.

Krishnagar Horticultural Station.—The final report of the work so far done has been submitted to the Imperial Council of Agricultural Research.

Pineapple.—Observation of varieties.—Singapore Queen, Giant Kew, Mauritius Spineless, Singapore Spineless, Rangamati, Jaldub and Ghorasal varieties have been tried, Singapore Queen has been the outstanding success both in yield as well as in quality.

An experiment to find out the best planting material was undertaken and it showed that side suckers were the best for the purpose.

Observation of varieties is being continued.

Clonal study to find out if the performance of the parents is being maintained by their progeny was continued.

Citrus—Observation of varieties.—The following varieties have been observed:—

Malta Orange (Tight skinned): Agra, Lahore and Shaharanpore.

Santra Orange (Loose Skinned): Nagpore, Lahore and Shaharanpore.

Limes—Sweet lime and Sindhi lime.

Lemons—*Kagazi*, Italian and Eureka.

Pomelo—Dacca Farm.

Grape fruit—Shaharanpore.

It has been definitely shown that Malta Oranges and to lesser degree Santra Oranges can be grown here. Sweet lime and Italian lemons have done very well. Dacca Farm Pomeloes and Shaharanpore Grape fruit trees have fruited but their performance is not satisfactory.

Weathering and root pruning of Santras.—The Santras fruited only after these treatments were given to them.

Mango and Litchi.—Varietial trial.—Grafts of twelve mango varieties of Nadia and Murshidabad districts and of seven litchi varieties from Behar and Nadia were planted in 1937 on a randomised plan so that result will be capable of statistical interpretation. Some of the mangoes have, however, fruited this season.

Propagation trials.—Budding was tried with mango without any success. Enarching of mango and marcotting litchi were successful in multiplication of varieties.

Bananas.—Observation of varieties.—A number of varieties from Rampal in Munshiganj, Shaharanpur in United Provinces and Madras and Bombay Presidencies have been observed. Shabri and Champa of Rampal and Rai Kela of Shaharanpur have succeeded well. Amritasagar (also known as Kanai Banshi) of Rampal has also shown some promise. The Madras and Bombay varieties failed.

A manurial trial has just been concluded. This was to find out the quantity and quality of Potash required by bananas. The results have been tabulated, interpreted and reported to the Imperial Council of Agricultural Research.

Fresh versus Acclimatised suckers.—The general belief in West Bengal is that the well-known table varieties of Rampal when brought there deteriorates after two or three seasons. To test the authencity of this belief a trial was undertaken with all the well known Rampal varieties to compare the performance of suckers brought from Rampal with that of the suckers collected from locally acclimatised Rampal varieties. This trial has also been concluded and the results have been tabulated, interpreted, and reported to the Imperial Council of Agricultural Research.

Papaya.—Observation of varieties.—This was carried out with a number of varieties from nursery-men. It was observed that there was no fixed variety. So far we have found that with proper care and cultivation good production is possible in the plains of Bengal. The percentage of plants with a male flower was, however, always greater than those with female ones.

Spacing experiment.—Plants five feet apart each way were found to thrive better than those seven feet apart.

Guava.—Observation of varieties.—A number of varieties were under observation. It has been found that Allahabad, Benares, Lucknow and Harijha varieties are the best.

Pruning of plants to induce better yielding.—The plants did not respond to this treatment.

Multiplication of desirable varieties.—Marcotting proved very successful.

Seed Farms.—Babu R. N. Goswami held the charge of the Paddy Seed Farms till the end of November 1940, after that the post remained vacant for the remaining period of the year. The officer spent 55 days on tour. During the year under report Union Board Farms and important private seed farms in different districts were inspected by the Seed Farm Officer and different stocks of *aus* and *aman* paddy seeds were tested for seed supply.

The most important work of the year under report was the distribution of Patnai No. 23 seed paddy in connection with demonstration schemes of the department. As the result of Patnai paddy distribution in previous years were encouraging, the cultivators all over the province were much impressed and they grew the variety successfully this year too. A grant of Rs. 1,000 was again received this year for Patnai paddy demonstration and 185 maunds of Patnai No. 23 seed paddy were purchased and distributed free among the cultivators of several districts to cover an area of about 500 acres. The standing crops of this variety were inspected from time to time by the officer in charge and by the Rice Research Officers, Bankura, and Chinsurah, and also by myself. The growers were advised about the proper requirements for the good cultivation of this paddy and also necessary instructions were given to the growers to preserve the purity and proper storage of the seed.

Patnai No. 23 seed paddy was distributed in the following districts among 479 cultivators:—

Name of districts.	Quantity. Mds.	Number of persons to whom seeds have been distributed free.
1. Bakarganj	.. 42	137
2. Noakhali	.. $8\frac{3}{4}$	16
3. 24-Parganas	.. 33	19
4. Jessore	.. 11	16
5. Bankura	.. 5	39
6. Burdwan	.. $18\frac{1}{4}$	35
7. Hooghly	.. 22	92
8. Khulna	.. 45	125
Total	.. 185	479

In some parts of the districts, namely, Jessore, Khulna, and Burdwan, the crop suffered from adverse effect of heavy rainfall and drought after transplantation. The growers of different localities where conditions were favourable were quite satisfied with the superior yield of Patnai paddy over their local varieties which has no doubt ensured its spread in the respective localities to a larger area next year. The yield of paddy was promising in Bagerhat and Bhola subdivisions of Khulna and Barisal districts. The maximum yield obtained during the year under report is 36 maunds per acre in Khulna district. It is growing popular all over the province due to its superiority in yield and better market price over the local varieties.

Mycology.—Messrs. P. C. Kar and J. C. Saha, M.Sc., held the post of Mycological and Additional Mycological Assistants respectively throughout the year. Babu Bimal Ranjan Ganguly was the Fieldman for the year.

Tour.—Mr. P. C. Kar spent 64 days, Mr. J. C. Saha 23 days and Babu Bimal Ranjan Ganguly 62 days on tour during the year.

With the appointment of an additional Mycological Assistant it has been possible to extend the activities of this section. Hence the work carried out during the year under review is reported under two heads: (*i*) general work in connection with the diseases of crop plants and their control, and (*ii*) original investigations in connection with the study of diseases of crops and their control.

(*i*) **General work in connection with diseases.**—Betelvine.—Spraying demonstrations were given in two villages in the district of Midnapore, viz., Bendia and Bhagawanpur. Necessary advice regarding plantation and the treatment of *pan borojes* was given to the following parties:—

(1) Director of Agriculture, Assam,

(2) Babu Basanta Kumar Das, Head Master, Khanjapur Pangasia H. E. School, Barisal,

(3) Niranjan Lal & Sons, Ambala Road, Shaharanpur,

(4) Senior Marketing Officer, Bengal,

(5) Babu Hara Lal Paul, Panditsan, Faridpur, and

(6) Babu Manindra Mohan Das, Secretary, Angaria Baroijibi Association, Faridpur.

Paddy.—The attack of Piricularia was observed practically in all the plots of *aus* in the beginning of June 1940 and on the *aman* seed-beds in the later part of the same month. Piricularia has been found on a grass known as Digitaria sanguinalis which grows everywhere and in all seasons. This, perhaps, supplies the source of infection of rice blast fungus. It has been observed that excessive dry condition brings up the disease but it is checked to a considerable extent with the setting in of rains.

Aus pure-line plots and *aman* seed-beds were sprayed with Bordeaux mixture to prevent the spread of disease with success.

Helminthosporium was observed during October 1940 in some of the experimental plots of the Economic Botanist, I, and on some plots of the farm. The attack was marked mostly on Jhingasail, Indrasail, Latisail and Bhasamanik.

Sclerotium oryzæ was observed on the paddy stubbles after harvest during December 1940.

P×S (8) paddy at Pabna Farm was attacked with Helminthosporium during July 1940.

Seed treatment with Mercuri chloride solution at 1 in 1,000 for 10 minutes was recommended.

The following diseases were observed in demonstration centres of district Pabna during July 1940.

A mild attack of Piricularia on Tilakkacheri *aman* paddy in No. 1 Ataikula Circle.

An attack of both Piricularia and Helminthosporium on the same variety of paddy in No. 2 Circle.

An attack of Helminthosporium and Phema on the same variety of paddy in No. 3 Circle.

During September 1940 the *aus* paddy plots both at Gopalpur and Ramnagar (grown by the Irrigation Department) were heavily attacked with Helminthosporium. Seed treatment with corrosive sublimate solution for 10 minutes was recommended.

Observation has been made and notes taken on the incidence of Helminthosporium disease on the 931 pure-lines of *aus* paddy maintained by Economic Botanist with the object of selecting comparatively resistant varieties.

Pan-sukh disease was observed in about a dozen sub-plots of the complex cultural experimental plots at Chinsurah Farm.

Ufra disease.—Ufra disease due to "Eelworm" was reported on broadcast *aman* paddies in the "*bil* areas" of the following localities:—Masnabad (Murapara), Lohajang (Tarpasa), Dacca district; Jabarpur and Gournaddi, Barisal district.

The following preventive measures were recommended:—

(1) Thorough burning of the affected fields after harvesting when the stubbles are dried.

(2) Ploughing of the land as frequently as possible.

(3) Steeping of the seed in salt-solution and destroy all light grains which will float on the surface and then wash the seeds in clear water, dry and sow.

Seed treatment.—The whole stock of experimental paddy seeds of Economic Botanist was treated with the following chemicals:—

(1) Corrosive sublimate solution at 1 in 1,000 for 10 minutes.

(2) Saturated salt solution.

(3) Agrosan G. at 1 in 500.

Sugarcane.—The disease of sugarcane red-rot (Collectotrichum falcatum) broke out in an epidemic form in some of the localities of Bengal. The disease was not only confined to the flooded area like last year, but highland crops were also attacked. In some fields the attack was extremely severe while in others it was of a sporadic nature. The disease was particularly observed on the following varieties:—

Dacca Farm—Co. 421, Darsana Sugar Mills (Nadia)—Co. 213, 421, Dinajpur Farm—Co. 213, Setabganj (Dinajpur)—Co. 213; Co. 213 Birbhum, Murshidabad and Nadia.

Wholesale destruction of the affected clumps by burning and the selection of healthy setts at the time of planting were recommended. Departmental leaflets on the preventive measures were distributed in the affected areas.

It is rather difficult to control the disease by these means until and unless the whole stock of cultivators' canes, where the attack is severe be rejected and a fresh supply made intensively from Government or private farms where we know that the stock is healthy. From time to time the crop should be examined by trained staff and the clumps which are found attacked with diseases should be destroyed by burning. In such matters Government's help is necessary.

Smut of sugarcane (*Ustilago sacchari*) was monthly observed on the ratoon canes of Ramnagar Sugar Mills (Nadia) and Gopalpur (Rajshahi).

Wilt disease (*Cephalosporium sacchari*) was observed in a mild form Co. 421 and P. O. J. 2878 (Darsana Sugar Mills), Co. 334 (Dinajpur and Faridpur Farms), and Co. 407, Dacca Farm,

Collar-rot (*Hendersonina sacchari*) on Co. 421 (Dinajpur Farm).

Cotton.—The plants of Dacca No. 1 of the Second Economic Botanist at Dacca Farm were found severely attacked with Anthracnose (Collectorichum Gossypii). At a later stage the bolls were attacked. This variety is supposed to be the best cotton of Bengal for its fine and long staple but it is very much susceptible to Anthracnose. The disease was more or less observed in all the places wherever it was grown.

The disease is carried through the seed and can be controlled to a considerable extent by proper seed-treatment. Arrangements are being made for the treatment of seeds in various ways.

Potato.—The potato crop in Kalimpong Farm was attacked with Alternaria solani.

Spraying with Bordeaux mixture was recommended.

Tobacco.—Leaf-curd (due to virus) was observed on most of the plant at Burirhat Farm, Rangpur. Destruction of affected plants was recommended.

Linseed.—Linseed plants of Jadabpur College were attacked as in the last year with rust (Uredo stage of Melampsoralini). Some plants of the Second Economic Botanist at Berhampore Farm were attacked with the "wilt disease" Fusarium lini.

Flax.—Like last year the seedling of flax plants were found attacked with Rhizoctonia sp. in all the experimental plots at Narayanganj, Dacca Farm and Gaibandha (Rangpur).

About 900 maunds of newly imported seeds of flax from Holland were treated with Agrosan G. before storing to destroy the existing pathogens on the seeds and to guard against secondary infection.

Before dusting with Agrosan G. the germination test of 1,557 samples were taken by different treatments.

Wheat.—*Puccinia triticina* and *Puccini glumerum* were observed on Gangajali. On *Jamali Puccinia triticina* predominated. The attack of *Puccinia glumerum* and *Puccinia graminis* was mild.

Wheat smut (*Ustilago tritici*) was observed on the following varieties of wheat—P. 111, P. 190, P. 80/5, P. 6, Gangajali Jamali, C. 591, P. 52, P. 518, Gangajali of Pabna Farm.

Jowar.—*Sphacelothica sorghi* as last year was again observed in the jowar plots of the Second Economic Botanist during December. Treatment of seeds before sowing was recommended.

Arhar.—Comilla Arhar No. H 5 was found attacked with the wilt disease Fusarium at Malda Farm. *Sclerotium rolfsii* was found only in one plant at Dacca Farm.

Cowpea.—Powdery-mildew (*Erysipha polygoni*) was observed on the cowpea at Berhampore Farm.

Groundnut.—During September 1940 Rhizoctonia solani was found on the groundnut plants in the experimental plots of the Second Economic Botanist. In the same month leaf-spot disease Cercospora personata was also observed.

Chilli.—A severe attack of Choanephora was observed on the chilly plants at Dacca Farm during June 1940. The tender twigs were mostly attacked and killed. Bordeaux mixture was sprayed.

Cauliflower.—During February 1941 a severe attack of Alternaria Brassica was observed on cauliflower plants at Faridpur Farm.

Lemons.—Kagji and Eureka lime fruits at Bankura Farm were found attacked with "scab disease" (*Spaceloma*). *Kagji* lime seeds to be very much susceptible to this disease. All the aerial parts are often found covered with irregular corky liesions more or less resembling warts.

Pruning of affected branches and spraying with Bordeaux mixture plus 1 per cent. oil emulsion were recommended.

Mango—A young Banerasi Langra mango tree in the Botanical area at Dacca Farm was severely attacked with the withertip disease, *Collectorichum glososporioides*, so much so that there was very little hope of its recovery. Twigs were all dead and the barks cracked. The tree was saved by proper pruning of the affected branches and through spraying with 1 per cent. Bordeaux mixture and is in full bearing now.

Bamboo disease.—A disease on bamboo locally known as "Bariala" was reported from Chittagong district. The disease was reported to be causing great damage for the last 10 to 12 years. Where there was once a forest of bamboo, to-day one would find only a few clumps here and there, and that too in an attacked condition. When a clump is attacked the leaves turn yellow and gradually fall, accompanied by dying-back from the top which ultimately breaks away. Specimens from the affected clumps were sent to the Forest Botanist, Dehra Dun. The Forest Mycologist had isolated two types of fungi from the diseased tissues, viz., (1) *Fusarium* species, and (2) *Diplodia sp.* The same two fungi were also isolated in the Laboratory at Dacca Farm. The parasitism of the fungi has to be determined by an inoculation experiment for which arrangements are being made to take up the work.

Demonstration Scheme of the Department.—A grant of Rs. 800 was sanctioned by the Director of Agriculture, Bengal, for the above purpose. Sprayers and fungicides were supplied to 13 Government farms out of this grant for spraying demonstrations in the districts.

Selection of cuttings.—About 93,000 cuttings of sugarcane were selected at the Government Farm, Dacca, by the Mycological and Entomological Section.

Examination.—The students of the Second Year Class of the Agricultural Schools at Dacca and Chinsurah were examined in Mycology.

Crop Reports.—Sixty four reports of different crop diseases were received from Government Farms and the public and reported on during the year.

Crop diseases.—Specimens of the following diseases were supplied to the Basanta Kumar Agricultural Institute, Rajshahi:—

(1) Piricularia oryzae on Oryza sativa.

(2) Helminthosporium oryzae on Oryza sativa.

(3) Sclerotium oryzae on Oryza sativa.

(4) Sphacelotheca sorghi on Sorghum vulgare.

(5) Phytophthore infestans on Solanum tuberosum.

(6) Sclerotiana sclerotiorum on Nicotiana Tabacum.

(7) Ustilago sacchari on Saccharum officinarum.

(8) Collectotrichum falcutum on Saccharum officianarum.

(9) Choanophra cunninghamiana on Capsicum.

(10) Macrophomina phaseoli on Corchorus.

Imperial Mycologist, New Delhi.—The following work was carried out by the Imperial Mycologist, Research Institute, New Delhi, for Bengal during the year under report:—

The Imperial Mycologist had visited Dacca Farm during the month of September 1940. There was a discussion on various plant diseases in the laboratory. He was also taken round the Farm to see different crop diseases.

Forty-six specimens and ten cultures of fungi were supplied to workers in Bengal, and 13 specimens of fungi were identified by him.

(*ii*) **Original Investigations.**—*Helminthosporium Leaf-spot Disease of Rice.*—An experiment was conducted during the year under review to find out the comparative effectiveness of various spray fluids or dusts that are commonly used for controlling the disease. Helminthosporium causes considerable damage to the rice crop. Transplanted Aman, Chinsurah 72, which has been found to be very susceptible to this disease, was selected for the experiment. The seeds were also disinfected with the respective chemicals before sowing.

The layout of the experiment was of a complex factorial type replicated in three randomised blocks.

The factors under observation were eight sprays (fluid or dust) and five times of spraying (or dusting).

For each chemical treatment (dust or fluid) one set of three plots (each having five plants) received one spray only, the second set was sprayed twice, the third set thrice, the fourth set four times and the fifth set five times. First spraying was done when the plants were one week old, and all other sprays after every two weeks the last spray being applied on the 63rd day, when the plants were ready for transplantation.

A coloured chart was prepared of diseased plants showing different degrees or intensity of infection. Five grades were made of such infections and marked as (O) for no, (1) for slight, (2) for appreciable, (3) for medium, and (4) for severe infection. The plants under observation were compared against this chart and marks (O, 1, 2, 3, or 4) noted down.

Other abbreviations used are—

A = Agrosan G.

B = Bordeaux mixture (1 per cent.).

C = Copper sulphate (2 per cent.).

D = Formalin (2 per cent.) solution.

E = Mercuric chloride (·2 per cent.) solution.

F = Pot Permanganate (·5 per cent.) solution.

G = Sulphur dust.

H = Control (= water).

Results of the Experiment.

FINAL INTENSITY OF INFECTION.

Analysis of Variance.

Variance due to.	Degree of freedom.	Sums of squares.	Mean squares.	Ratio.
Block	2	0·0452	0·0226	..
Spray	7	7·0110	1·0016	4·886**
No. of times of sprays ..	4	19·6695	4·9174	23·987**
Sprays X No. of times of sprays	28	0·6833	0·0244	..
Treatment	39	27·3638	0·7016	3·422**
Error	59	12·0452	0·2050	..
Total ..	100	39·4542	..	..

**Significant at 1 per cent. level.

Summary of results.

Sprays.	H.	B.	E.	C.	G.	F.	D.	A.	S. E.
Intensity of infection	3·34	3·18	2·99	2·95	2·85	2·72	2·69	2·57	0·116

Conclusion :— H, B, E, C, G, F, D, A.

No. of times of sprays.	1	2	3	4	5	Standard Error.
Intensity of Infection ..	3·37	3·22	2·95	2·57	2·44	0·092

Conclusion :— 1 2 3 4 5

The effect of the above fungicides on the germination has also been observed.

120 plots (=here pots) being sown with 25 seeds, were arranged in fifteen randomised blocks. The percentage of germination was calculated on the number of seedlings that came out above the soil level.

PERCENTAGE OF GERMINATION.

Analysis of Variance.

Variance due to.	Degree of freedom.	Sums of squares.	Mean squares.	Ratio.
Block	14	596·8	44·06	..
Treatment	7	1,333·3	190·47	7·567**
Error	98	2,466·7	25·17	..
Total ..	119	4,396·8	..	..

**Significant at 1 per cent. level.

Summary of results.

Sprays (chemicals).	E.	A.	F.	G.	H.	B.	C.	D.	S. E.
Average percentage of germination.	99·0	98·7	97·6	97·0	97·0	89·3	89·3	87·0	1·34

Conclusion :— B, C and D significantly lower the percentage of germination.

General remarks on the result of the Experiment.—Agroson G gave the best result among the different fungicides used in controlling the disease. When seeds are disinfected with B, C or D the seed rate should be increased proportionately.

A New Parasitic Disease of Sugarcane.—Aeginetia pedunculta Wall has for the first time been found to be growing parastically on sugarcane stools in Munshiganj area (Dacca). The parasite establishes connection with the roots of the host plants and sucks out foods prepared by the hosts as a results of which the latter lose vigour, show symptoms of wilting and ultimately succumb to death. Setts of two varieties of sugarcane have been contaminated with the parasitic seeds and planted keeping necessary controls.

Bacterial Wilt of Tomato.—An experiment was conducted at the Dacca Farm during the year under review to find out the effect of various treatments on the the control of bacterial wilt of tomatoes and yield of plants. The casual organism was ascertained to be

Bacterium Solanacearum. The symptom, as the name of the disease indicates, is characterised by the wilting of plants. The wilting starts from the tender leaves and then proceeds elsewhere, ultimately the plant succumbs. On cutting a section of the stem and specially the root the xylem vessels are seen to be occuluded by means of bacteria. The vessels, thus occluded, appear to possess a yellow to brownish tinge due to the presence of bacteria *en masse*.

The design of the experiment was of a split-plot type replicated in two randomised blocks.

The factors under observation were four soil treatments, six seed treatments, two varieties. There were 6 plants of each variety in each plot. Total number of treatments were therefore 24.

Seeds were treated as follows:—

(1) Formalin— 2 per cent. solution for 15 minutes.

(2) Copper sulphate—2·5 per cent. solution for 15 minutes.

(3) Corrosive sublimate—·1 per cent. solution for 10 minutes.

(4) Agrosan G (dust).

(5) Ceresan (dust).

(6) Control.

Soil was treated as follows:—

(A) Heating—By burning a layer of rice stubbles 3″ thick.

(B) Corrosive sublimate—·25 per cent. solution at the rate of 1 gallon solution per 4 square foot of soil surface.

(C) Kerol—1 in 400 parts of water. Applied at the rate of 1 gallon Kerol to 30¼ square yard of soil surface.

(D) Control.

Key to Treatments.

	(1)	(2)	(3)	(4)	(5)	(6)
(A) ..	1	5	9	13	17	21
(B) ..	2	6	10	14	18	22
(C) ..	3	7	11	15	19	23
(D) ..	4	8	12	16	20	24

Death of Plants.

Analysis of Variance.

Variance due to.	Degree of freedom.	Sums of squares.	Mean squares.	Ratio.
Block	1	7·0416	7·0416	4·841*
Soil treatment	3	3·8750	1·2917	0·888
Seed treatment	5	6·2083	1·2417	0·854
Soil × Seed treatment ..	15	24·3750	1·6250	1·117
Treatment	23	34·4583	1·4982	1·030
Error	23	33·4583	1·4547	..
Variety	1	7·0416	7·0416	6·141*
Variety × treatment ..	23	24·4384	1·0625	0·927
Error	24	27·5201	1·467	..
Total ..	95	133·9583	..	..

*Significant at 5 per cent. level.

Remarks.—Only Blocks and varieties are significant. Dacca Farm variety is more resistant than Sutton's Early Large Red. The various treatments are not different in their action.

Yields of Plants.

Analysis of Variance.

Variance due to.	Degree of freedom.	Sums of squares.	Mean squares.	Ratio.
Block	1	627·82	627·82	98·251**
Soil Treatment	3	148·02	49·34	7·721**
Seed Treatment	5	39·55	7·91	1·238
Seed × Soil treatment ..	15	184·95	12·33	1·930
Total treatment	23	372·53	16·20	2·535*
Error	23	146·95	6·39	..
Variety	1	287·78	287·78	16·877**
Variety × Treatment—				
V × Soil	3	128·70	42·90	3·827*
V × Seed	5	65·21	13·04	1·163
V × Soil × Seed ..	15	63·97	4·26	0·380
	23			
Error	24	409·27	17·05	..
Total ..	95	2,102·23	..	..

*Significant at 5 per cent. level.
**Significant at 1 per cent. level.

Conclusion.—Block, Variety and Soil treatments are significant. Sutton's Early Large Red variety as a yielder is superior to Dacca Farm variety. Soil treatment (A) and (C) are significantly superior to (B) and (D). Treatment No. 7 gives the heaviest yield, then comes treatment No. 1; treatment Nos. 10 and 15 give the least yield. The soil treatment affects the two varieties differently. Soil treatment (A) gives heavier yield than (C) in Sutton's variety whereas (C) gives a heavier yield than (A) in the case of Dacca Farm variety.

Experiment to evolve resistant varieties of Betelvine against the attack of diseases.—Fourteen varieties of Betelvine (numbered 1 to 14) each planted in a row were grown in two separate borojes.

The soil of one (after the plants had been established) was infected with soil containing diseased materials brought from an infected boroj.

The other was kept as control.

The following number of plants in the infected boroj were attacked with diseases during the year under report:—

P—represents Phytophthora, R—Rhizoctonia, S—Sclerotium rolfsii and C—Colelctotrichum.

No. 1—C.

No. 3—P, C.

No. 4—P, R, C.

No. 5—P, R, C.

No. 6—P, R, C.

No. 8—P, R, C.

No. 9—R, C.

No. 10—P, R, C.

No. 11—C.

No. 12—C.

No. 13—P, R, C.

No. 14—R, C.

In the control boroj the following numbers of plants were attacked:—No. 5—S, C; No. 1—R, C; No. 4—C; No. 6—C.

Conclusion.—*Phytophthora* which is responsible for a greater damage to Betelvine plants in Bengal and elsewhere was observed in the infected boroj only in September 1940 after one month of soil infection.

The control boroj had remained free from this disease where spraying with Bordeaux mixture was done.

The infection experiment will be continued for some years more till some resistant varieties are evolved.

Programme of Work for the year 1941-42.

(1) To continue to take notes and observation on the incidence of *Helminthosporium* disease on the 931 pure-lines of *aus* paddy maintained by the Economic Botanist with the ultimate object of selecting out the resistant varieties for recommendation to the cultivators.

(2) To continue the investigation on the life-history, mode of infection and perination and control of the new sugarcane phanerogamic parasite, *Aeginetia pedunculata*.

(3) To study the life-history of *Sclerotium oryzas* Catt. in detail for finding out the Ascigerous stage, viz., *Leptosphaeria Salivinii* Catt., which has not yet been reported to have seen in India. The investigation has already been taken up.

(4) To try heat treatment to control the *Anthrachose* disease of Dacca No. I cotton, which is causing considerable damage to the cultivation of the strain in most of the districts of Bengal.

(5) To study the parasitism of the two fungi, viz., (1) *Fusarium* and (2) *Diplodia* on bamboo by inoculation experiment.

(6) Seed treatment of different Rabi crop seeds, viz., peas, oats, khesari, lentil and gram which were found attacked with diseases in different Government Farms during December, 1940.

Entomology.—Mr. Md. Abdul Hakim Bhuya was the Entomological Assistant and Mr. Md. Mazharuddin Qureshi was the Additional Entomological Assistant during the year under report.

Tour.—The assistants spent 127 days on tour and visited several villages besides the Government Agricultural Farms in the districts of Dacca, Mymensingh, Bogra, Malda, Pabna, Rajshahi, 24-Parganas, Midnapore, Bankura, Burdwan, Nadia, Birbhum, Murshidabad, Faridpur, Darjeeling (Kalimpong) and Tippera.

With the appointment of an Additional Entomological Assistant it has been now possible to extend the activities of the section, hence the work done during the year is reported under two heads, namely, (*i*) General work on crop pests and their control, (*ii*) Original investigation in connection with the pests of crops and their control.

(*i*) *General work on crop pests.*

Paddy.—(1) *Rice tem-borer* (*Schoenobious insertellus Wlk*).—The pest was reported from Dacca, Mymensingh, Barisal, Noakhali, Faridpur, Tipperah and Bankura in July and August in transplanted paddy. The usual method of letting out water from the affected plots was recommended with advantage. Chalcid egg-parasites were active throughout the season.

A species of parasitic nematod (round-worm) was found in the body cavity of the larvæ of the Rice stem-borer (*Schoenobious insertellus Wlk.*). They feed on the fat bodies of the larvæ which ultimately die. About 40 per cent. of the Schoenobious larvæ collected in September and October were found to be parasitised by these worms.

(2) *Rice Hispa* (*Hispa armigera Baly.*).—This year the pest attack appears to be of mild nature as, unlike last year, reports were received from only one district, namely, Bankura. The pest was successfully dealt with by spraying with an emulsion of kerosine oil and Pyrocyde 20, etc., in proportion of 2 seers of kerosine emulsion to 2 chattaks of Pyrocyde 20 diluted with 5 to 6 times of water at Bankura.

(3) *Rice Swarming Caterpillar* (*Spodohtera maurtia Boisd*).—This pest did not present a serious problem this year as its attack was very sporadic. Dinajpur and Jessore were the only two districts from where it was reported in comparatively large numbers.

(4) *Land crabs*.—The pest appeared in paddy fields in Kumarpur, Sundarban area of 24-Parganas, as a serious pest. The crabs remained underground most of the time and came out after the rains with their young ones to cut the stems of the transplanted paddy. In low patches of fields the cultivators had to transplant paddy seedlings three to four times as the transplanted seedlings were repeatedly cut away by the crabs in these depressions. This species seems to live in sweet water and cannot stand salt water. The following control measures were recommended :—(*a*) levelling of the low land areas of the paddy fields; (*b*) handpicking and killing the crabs when they come out of their holes after the first rains in June and July; (*c*) encouragement of predators such as crows, kites, jackals, etc., which were already present there; (*d*) pouring carbon-bi-sulphide at the rate of ¼ tola in each hole, which appears to be deep-going, and closing the surrounding holes This should be done in the dry season.

(5) *Rice stem fly* (*Atherigona oryza sativa*).—The maggots of the fly attacked *aus* experimental plots in the month of July and caused some damage to the paddy seedlings at an early stage. Neem cake was sprayed as a deterrent and there was no second attack of the flies.

(6) *Paddy leaf-hopper* (*Nephotattix bipunctatus Fabr.*).—The leaf-hoppers were seen invading the *aus* experimental plots at Dacca in large numbers by the end of July. They suck sap out of the paddy leaves which wilt and dry up. The hoppers were caught in large numbers by smearing grease over a piece of cardboard and dragging it over the paddy leaves. The hoppers stuck to the grease and died there.

Sugarcane.—(1) *Top-shoot borer* (*Scirpophaga nivella F.*).—This pest appeared in the beginning of March at Dacca Farm and was also reported from Dinajpur, Rajshahi, Murshidabad, Pabna and Nadia. The insects were kept down by removing the plants showing the "dead hearts" and by handpicking of egg-masses. Light traps were also used.

(2) *Stem borers* (*Argyria tumidcostalis?*).—Their attack began in April at Dacca and they were also reported from Dinajpur, Rajshahi, Murshidabad, Burdwan, Pabna and Faridpur about the same time. Removal of affected shoots gave a certain measure of protection.

(3) *Leaf-hopper* (*Pyrilla pusana Dist.*).—The pest began its activity in April and May but the main attack started in October and November at Dacca. Smoking the fields gave a temporary relief. This pest did not appear in many places but wherever it appeared its attack was of the most serious intensity. Berhampore and Dacca suffered the most, but at both these places the eggparasites appeared simultaneously as the pest and that was one reason why the pest could not spread much.

Rats.—They were reported damaging the cane crop from Bogra and Nadia districts.

Jute.—(1) *Jute semi-looper* [*Anomis* (*Cosmophila*) *sabulifera Guen*]. —This pest was reported from Burdwan, Midnapore, Nadia, Chinsurah and Jessore in an epidemic form. Handpicking of caterpillars was recommended in the early stages of attack. Birds were encouraged by erecting bamboo *machans* in the fields where they could sit.

(2) *Hairy caterpillars* (*Diacrisia obliqua Walk.*) *and Jute apion* (*Apion corcorie*).—The attack of these two pests was milder than in previous years. They were reported from Khulna, Faridpur and Nadia in epidemic form.

Cotton.—Cotton crop faired well as far as insect pests were concerned. Only leaf-rollers (*Sylepta derogata F.*) and boll-worms (*Earias sp.*) were reported from Dacca, Mymensingh and Midnapore districts but their attack was not very serious. Removal of attacked leaves in early stages in the case of leaf-rollers kept the pest in check. For boll-worms, drying of the seeds in the hot sun and fumigation before sowing was recommended.

Flax.—(1) *Cut worms* (*Agrotis ypsilon Rott.*) were the only main pest attacking flax crop in Narayanganj area. Different methods of control like irrigation with crude-oil emulsion and trenching around the fields were tried with partial success. The problem however requires further study.

(2) *Leaf-roller* (*Sylepta sp.*) attacked flax plots at Kalimpong Farm. The pest was kept under control by handpicking and spraying lead arsenate at the rate of 1½ tea-spoonful in one gallon of water.

Wheat.—*Wheat aphis* (*Macrosiphum granarium Kley.*) attacked wheat plots at the time of earing in large number. At the same time Lady-bird beetle (*Coccinella septemunctata L.*) appeared in large numbers and laid eggs in the fields among the aphides colonies. The larvæ after hatching from the eggs ate up the aphides within a few weeks. Thus the pest was biologically controlled.

Mustard.—*Mustard aphides* (*Brevicoryne brassicæ Linn.*).—Aphides did a considerable damage to the crop but the loss was not much compared to the destruction caused by this pest the previous year. The pest kept under control at Dacca by spraying with kerosine oil and soap emulsion and by releasing Lady-bird beetles which are still under trial.

Vegetables.—*Cutworms* (*Prodenia litura F.*) and aphides (*Brevicoryne brassicæ Linn.*) were observed attacking cabbage plants in Dacca, Faridpur and Suri (Birbhum). They were kept under control by handpicking and spraying with a dilute emulsion of kerosine respectively. Brinjals suffered considerably in Dacca district as a result of the attack of shoot-borers (*Eublemma olivacea Wlk.*). Removal of attacked shoots was recommended and it proved effective.

Stored grain pests.—Paddy grain moths were observed in stored paddy at Chinsura, Midnapore, Bogra, Pabna, Suri and some other places. Carbon-bi-sulphide fumigation destroyed all the moths and their different stages. The same chemical proved very effective in killing the Bruchid beetles which appeared in stored pulses at a number of Government Agricultural Farms, and a variety of other stored grain pests.

The year on the whole was not favourable for insect pests. Almost all the pests appeared in small numbers and prompt action in the beginning of their attack prevented their further spread. Sugarcane borers, both the stem and top borers, however, managed to thrive well and caused a considerable damage to the sugarcane crop of the province. *Agrotis sp.* was another obstinate pest which gave some trouble and has yet to be effectively dealt with.

(ii) *Original Investigation.*

It may be noted that the work on problems taken up was started only this year and hence data have not yet been completely analysed to give out any concrete results.

Experiments on Sugarcane pests.—As no separate piece of land was available all the experiments on sugarcane pests were accommodated in the Agricultural Chemist's Cane Experimental plots. Thanks are due to the Agricultural Chemist and his staff without whose valuable co-operation and assistance it would not have been possible to undertake this work.

(1) *Varietal tests for resistance to borer.*

Object.—To study the comparative resistance of common varieties of sugarcane to the attack of—

(*i*) Top borer (*Scirpophaga nivella*) (*Scirpohaga monostigma*).

(*ii*) Stem borer (*Argyria tumidocostalis*) and others.

(*iii*) Root borer (*Emmalocera depressilla*).

Experiments on Sugarcane pests.—As no separate piece of land was (Co. 518, Co. 281, Co. 508, D. S. 35), two mid-season (Co. 371 and Co. 213) and two late varieties (Co. 331 and Co. 421) were grown on the Dacca Farm with five replications of each. Periodical readings were taken of the incidence of borers in those varieties. In all, six readings were taken during the season, beginning from April up to the end of October 1940. The total number of canes in each plot in the beginning of the season, the number of attacked canes in each reading and the different species and stages of the borers found in them were recorded, as also the final yield of canes and juice of each plot after harvesting.

Observation.—It was observed that the early sown varieties suffered more as a result of the attack of all borers combined. Root borers appeared only in the early part of the season (March and April) in all the varieties, but the damage caused by them was practically negligible. Of the early varieties D. S. 35 suffered the most, the other three were almost at the same level as far as the borers were concerned. This statement, however, is based upon general observation. The results of analysis of the data are being awaited.

(2) *Incidence of borers and their life-cycle.*

Object.—To study the periodical incidence of the common species of sugarcane borers, the seasonal changes of their life cycle under field conditions and their relation to the temperature, rain fall and humidity.

Procedure. This experiment was a part of the experiment No. 1 on varietal trials. The number and the species and the different stages if the borers removed from the plots during the year were recorded. The temperature, rainfall and humidity prevailing during the year in Dacca were also recorded.

Result.—Analysis of the data to establish the co-relation between the weather and the indicence and life-cycle of the borers is not yet complete.

(3) *Economic value of the recommended borer-control measures.*

Object.—Methods like handpicking of egg-masses in the case of top borers and the removal of attacked canes in the case of top and stem borers are commonly recommended to cambat these pests. Thinning of the field as a result of the removal of attacked canes must necessarily cause some reduction in the total number of canes. The money spent on removal operations also raises the cost of production appreciably. This experinemt was devised in order to find out, if this additional expenditure and the thinning of plants is justified by the possible increase in the outturn of cane juice, and also to know up to what stage of plant growth, if at all it is desirable to remove affected plants.

Procedure.—Four varieties of sugarcane were grown in a field with five replications of each. There were, thus, twenty plots in all of the size of $60' \times 16'$ with four rows of sugarcane in each. Two rows of each plot were selected at random for applying the control measures while the other two were left as "check". Affected canes were removed from the controlled rows twice a month in the beginning of the season but later on they were removed once a month only. The cost of these operations was duly calculated and recorded. The last removal was done in the month of September 1940. At the time of harvesting the total yield of cane and that of juice, both of controlled and check plots, was recorded for comparison.

Observation and results.—It was observed that in spite of the fortnightly removal of attacked canes and egg-masses the controlled portions of the plots could not be kept absolutely free of borers. The data have not yet been completely analysed but from the figures on yield it appears that the removal operations have resulted in the reduction in yield, both of canes and juice, in the majority of cases suggesting that it may not be paying to continue the removal operations till so late in the season.

(4) *Control of cut-worm (Agrotis sp.).*

Flax Pests.—This pest destroys a number of *rabi* crops and is very difficult to control because of its habit of appearing only at night as also of breeding in the soil. Treatment of soil with lime and ash, trenching, pitting and some other mechanical measures were tried to check its spread in flax fields but so far no satisfactory results have been obtained. The method so far proved more effective is to irrigate the field which will bring out the caterpillars to be preyed upon by crows, *mainas* and other birds.

(5) *Studies on the Betelvine white-fly (Aleurodes nubilans Buckt.).*

Observation.—The flies lay eggs on the undersurface of the leaves in a circular fashion. Each egg is attached by a stalk to the leaf. The eggs are covered with a chitin of dentate ridges. The eggs generally split length-wise at the opposite end of the attached stalk and the larvæ emerge through that slit. The larvæ after hatching from the eggs move about on the leaf for some days and then settle at a place and pupate. Hundreds of these pupæ can be seen on a single leaf. The undersurface of the affected leaf looks ugly and so the value of the leaf is reduced. The flies and the larvæ suck sap out of the leaves which gradually fade and lose their colour.

A chalcid parasite was found emerging from the pupæ. It is not yet known how far this parasite is useful in checking the flies. The parasite has not yet been identified.

Control.—In the beginning of the attack one application of tobacco decoction was enough, but in cases of severe attack two applications after an interval of 3 days checked the pests.

(6) *Studies on the Pea-stem fly (Agromyzidæ).*

Observation.—The pea plots at Dacca, Rajshahi and Malda farms were found damaged by the fly. In all the affected plots most of the attacked plants examined were found associated with "root rot" caused by some fungus. It is not known whether the attack of fungus was caused by the injury of the maggot or the flies were attracted to lay eggs on the root by rotting of the plant root caused by the fungus. The flies lay eggs near about the root and the larvæ after hatching attack the pea-stem at a point on the surface of the ground and then tunnel and go upwards. The sap supply is thus cut off and the plant becomes yellow, and ultimately dies. In some cases more than one larvæ were found inside the attacked plants.

A species of chalcid parasite emerged from one pupa in the laboratory. The species has not yet been identified.

Control.—Diluted carol solution had no effect as a deterrrent. By the use of "light trap" (Petromax lamp was used) a large number of flies were attracted and killed.

The problem requires further study. Some other experiments will be conducted next year in consultation with the Mycological Assistant.

(7) Study of the structure of the midrib of sugarcane leaves.

Object.—The top-shoot borers (*Scirpophaga Nivella* and *S. Monostigma*) first bore through the midrib of the top-most leaves on which the eggs are laid and then enter the stem of the plants. This led to the suggestion that the hardness and the structural differences of the midribs may play an important part in checking the penetration of the tiny caterpillars. The undermentioned work was started with a view to study the comparative hardness as revealed from the structure of the midrib of a number of varieties of sugarcane.

Procedure.—Portions of top leaves were cut from both the resistant and susceptible varieties of sugarcane. Their sections were made which are at present being examined under the microscope to study the structural differences of the epidermal and cortical tissues. The work is still in progress and no conclusive results have yet been obtained.

(8) Collection and rearing of the parasites of sugarcane borers.

Object.—To collect the indigenous parasites of the top and stem-borers of sugarcane, to estimate the percentage of their parasitisation and to study the possibilities of rearing them in capacity.

Procedure.—Besides the collection of parasitised larvæ of stem-borers (*Argyria tumidicostalis*) and top-borers (*Scirpophaga Nivella* and *S. Monostigma*) at Dacca Farm, tours were performed in cane-growing districts like Nadia, Rajshahi and Dinajpur for the collection of these parasites. An up-to-date record was kept of the number of parasitised and healthy borers obtained fortnightly from the cane fields at Dacca. The parasites thus obtained were reared in the laboratory to study the rate of their multiplication and their life-cycles.

Observation.—So far two species of the parasites of top-borers (*S. Nivella* and *S. Monostigma*) and one of stem-borers (*Argyria tumidicostalis*) have been collected and reared. The percentage of parasitisation in no case seems to go higher than eight. None of the species of the parasites have yet been identified. They have, however, been sent to New Delhi for the purpose in all their stages.

Result.—This work was started towards the end of the season. More collection will be made the next season before publishing the results.

(9) Studies on a fungus suspected to be a parasite of Pyrilla sp.

Besides borers, leaf hoppers (*Pyrilla sp.*) are also serious pest of sugarcane crop. A fungus had been found growing on the dead bodies of Pyrilla nymphs and adults in several districts of Bengal in 1939. In order to find out if the fungus was parasitic or saprophytic, cultures were prepared from it and living hoppers were smeared with it and kept under observation. The death rate of the treated and the untreated hoppers was found to be the same and the examination of the sections of the bodies of treated insects revealed that there was no trace of fungus in them till a long time after their death. This proved that the fungus was of a saprophytic nature and hence the experiment has been discontinued.

(10) Studies on the egg-parasite of paddy stem-borer (Schœnobius insertellus Wlk.).

Object.—To study the life-history of the chalcid egg-parasites of paddy stem-borer, to find out the percentage of parasitisation of their eggs and to determine the utility of these egg-parasites in Biological control of the rice stem-borers.

Procedure.—The egg-masses of the paddy stem-borer were collected from Dacca Farm area in the month of September and each one of the egg-masses was kept in a separate tube. When the minute egg-parasites emerged from the egg-masses all the parasites were counted including those which could not emerge from the eggs. The number of eggs in each egg-mass was also counted. That was a difficult task to do accurately as the egg-mass remained covered with buff coloured hairs. All possible methods were used to count the number of eggs accurately. At first the hairs were removed very carefully and then the egg-masses were boiled for a few minutes in 70 per cent. alcohol. This treatment made the egg-masses a little more transparent. After cooling they were placed under the binocular microscope and the number of eggs was counted. In case of doubt the egg-mass was dissected carefully with fine needles and the number of eggs was determined by the surrounding walls.

Observation.—Two species of egg-parasites were found. They appeared within a week after the laying of egg-masses by the paddy stem-borer. Their life-histories are more or less similar. The method of egg laying by these parasites is rather interesting. The parasites at first sit on the egg-mass and then begin to deposit eggs by thrusting their fine ovipositores inside the eggs of the rice stem-borer one after the other. When one egg-mass is finished the parasites fly away and sit on another egg-mass.

Result.—In September about 73 per cent. of the egg-masses were found parasitised and about 67 per cent. and 39 per cent. of eggs of the masses were found parasitised, by Nos. 1 and 2 parasites respectively. The parasites take 7 to 9 days to complete their life-cycle inside the eggs.

Inference.—There is a possibility of utilising one of the egg-parasites for biological control of rice stem-borer, provided facilities for rearing them are available.

(11) Rearing of Lady-bird beetles (Coccinella repanda Thumb).

It is gratifying to note that the Director of Agriculture, Bengal, has been taking a keen interest in this particular work of breeding.

Object.—It is well-known to the cultivators that Lahi or Jab Poka (*Brevicoryne brassicæ*) does a great deal of damage to the mustard crop in Bengal. The coccinellid beetles prey upon these aphides and destroy a large number of them. The object of this experiment was to rear the beetles in large numbers in the laboratory and then to release them in mustard fields affected by the aphides.

Procedure.—Many species of the beetles were collected from different places but only Coccinella repanda, which eat a number of species of aphides such as aphis on cotton, mustard, cow-pea, cabbage, etc., were selected for rearing. The beetles were first kept for multiplication in two big cages 7′×3′ covered with curtains. But this method did not give a satisfactory result and the beetles did not multiply to the desired number. This might be due to the following reasons:—(1) the males and the larvæ eat up the eggs laid by females; (2) when a larva is hungry and also at the time of scarcity of food it kills the younger or weaker ones. In the fields where the area is extensive and food is abundant the above incidents rarely happen. To overcome these difficulties in rearing, each pair of beetles was kept in a separate card-board box with two holes on the opposite sides for ventilation.

It was observed that the beetles lay eggs on the side of the card-board boxes. So a strip of brown paper was placed inside the box along its walls. The beetles laid eggs on the brown paper and their egg-masses were collected from all the boxes every day by cutting that portion of the paper and by putting it in a separate card-board box for hatching and rearing. Supply of food was a great problem to solve as aphides, their natural food, were not always available on the field crop. During the month of March, April and May aphides disappear and the beetles also can hardly be seen. To meet this difficulty a regular culture of aphides was also tried to be kept ready in pot cultures of cow-pea or mustard. But these cultures could not be successfully maintained for want of laboratory facilities and seasonal changes. Fresh raw-meat juice and egg yolk were tried to solve the food problem and they were found to be partially satisfactory.

Observation.—The maximum number of eggs laid by a female was 412 and the minimum 52 at a temperature between 82-60°F. in the laboratory. The life-cycle is completed in 16 to 19 days in November as follows:—egg stage 3-4 days, larval period 9-10 days, pupal period 3-5 days. It may be noted that during the same period the aphides may complete up to four cycles. Larval is the longest and the most important period in the life-cycle of the beetles, because the larvæ eat aphides voraciously. It was previously reported in "Indian Insect Life" that in the case of *Chilomenes sexmaculata* a larva required 200 aphides a day, but in this species it has been observed that a full-grown larva can eat only up to 30 aphides a day.

A species of parasite was reared from the dead larvæ of *Coccinella Septempunctata Linn.* both from Berhampore and Rajshahi. It is not yet known how far the parasite is destructive to the larvæ of the beetles and whether the parasite attacks any other coccinellid larvæ.

Result.—The method of rearing beetles in cardboard boxes was discovered late in the season and so full advantage of it could not be taken during the season. Mortality among the larvæ was high. This might be due to (*i*) high temperature in the laboratory during the night when doors remain closed, (*ii*) want of food (aphides) and other technical difficulties in feeding. With all these difficulties about 300 beetles were reared although several thousands were expected. Out of these beetles 20 pairs were released in Tori plots of Dacca Farm where a few mustard plants were found attacked by aphides. After a week the field was searched and the aphides could not be seen in it.

III.—OTHER ACTIVITIES.

(1) Over 100,000 sugarcane cutting were selected at Dacca Farm for distribution in different cane-growing regions.

(2) Notes were prepared on the control of stored grain pests and a copy of them was sent to each District Agricultural Officer.

(3) A note on control of insect pests in general, was prepared for publication in the Agricultural Supplement of the *Statesman*.

(4) A scheme for research on insect pest of paddy was prepared and submitted for the approval of the Government of Bengal and the Imperial Council of Agricultural Research.

(5) A statement of approximate annual loss to the major crops of Bengal due to insect pests was also prepared.

(6) During the year 98 reports of insect attack on different crops were received and measures to combat the pests were suggested in all cases. Besides, more than 25 other letters were received and replied to by this office in connection with the supply of show cases, pamphlets and other valuable information.

(7) Lectures on crop pests were given to the Dacca Agricultural School students.

Programme of Work for the year 1941-42.

All the experimental work described above will be continued with the exception of the experiment No. 9, on leaf hopper (*Pyrilla sp.*) of sugarcane. Some modifications and changes in the lay out and other details of the field experiments may have to be made in the light of the results of this year's work.

Schemes for Investigation of Sugarcane Pests.—Mr. A. B. Mitra, B.Ag., was in charge of Dacca Station throughout the year.

In connection with survey work of sugarcane borers eleven localities including the central one, were selected from the sugarcane growing tracts all over Bengal with headquarters at Dacca. The budget grant for 1940-41 was received on the 28th June 1940. In the meantime the Regional Staff spent 10 days on tour in the month of April 1940, in connection with selection of localities and also survey work. In the months of May and June, 1940, work was done within 5 miles of the headquarters. Reports for these months were sent to the Second Entomologist, New Delhi. Regular survey work was undertaken from the month of July 1940. The staff spent 131 days on tour during the year. They visited twenty-two villages in the following districts of Bengal:—Dacca, Mymensingh, Rangpur, Dinajpur, Rajshahi, Pabna, Nadia, Murshidabad and 24-Parganas. They came across all the three kinds of sugarcane borers during the survey work.

As regards the species of sugarcane borers observed during the year mention may be made of the following:—

(1) *Scirpophaga spp.*

(2) *Diatræa auricilia Dudgn.*

(3) *Argyria sticticraspis Hmpsn.*

(4) *Argyria tumidicostalis Hmpsn.*

(5) *Sesamia spp.*

(6) *Emmalocera depressella Swinh.*

Many other pests were also observed, the chief among them being Pyrilla, Hispa, Mealy bugs, Termites, White flies and beetles. A few species of larval parasites were found either in the grub or pupal stages and some in the adult stage. During the year under report the staff also visited Kurseong and Kalimpong to investigate if the stem breaker borer pest, *Chilo trypests* Bisset, could be found in the mountainous tracts of Bengal as desired by Mr. Isaac, Second Entomologist. Enough of sugarcane borers were collected from Kalimpong, which damaged to a considerable extent the top and stem portion of a local variety of

cane called "Kala gambra". This was the first time that the incidence of sugarcane borers was reported from the hills of Bengal. Some of these specimens were sent to New Delhi and were identified as *Sesamia spp*.

According to the instruction of the Second Entomologist some adult specimens of Pyrilla, preserved dry, were also sent during the year to Dr. M. A. H. Quadri of Aligarh Muslim University who is in charge of an Imperial Council of Agricultural Research Scheme regarding Pyrilla.

It was not possible to undertake survey work during February 1941 at outside localities as the budget grant for tour was almost spent. The selected sugarcane plots at headquarters were also either already harvested or were under harvesting operation, so no records could be obtained from these plots. The report for this month was sent without the survey data (Field diary).

The printed copies of instructions and forms required for the revised Regional Survey of Sugarcane Borers Scheme were received here on the 22nd October 1940 and the Regional Survey Staff began to make use of these forms from November 1940 onward. Previous to this monthly reports were sent in typed forms. Monthly reports together with specimens of sugarcane borers and other insect pests which were collected during survey work were also sent to New Delhi.

The following table is given for ready reference regarding the work carried on during the year:—

Month.	No. of days on tour.	No. of localities visited.	No. of villages visited.	No. of fields surveyed.	Kinds of sugarcane borers found.	Other pests observed.	Remarks.
April 1940 ..	10	3	6	30	Top, stem and root borers.	Beetles ..	Beetle caused dead heart.
May 1940 ..	5	1	5	25	Do. ..	Pyrilla in very small number.	
June 1940 ..	5	1	5	25	Do. ..	Termite Hispa but no Pyrilla.	
July 1940 ..	21	7	14	70	Do. ..	Pyrilla.	
August 1940 ..	19	9	18	90	Do. ..	Do.	
September 1940 ..	12	5	10	50	Do. ..	Do.	
October 1940 ..	11	5	10	50	Do. ..	Do. ..	Quite a large number of adult.
November 1940 ..	20	6	12	60	Top and stem borer.	Pyrilla and pink mealy bugs.	Pyrilla was found dead on the leaves.
December 1940 ..	17	6	12	60	Top, stem and root borers.	Pyrilla very small number and pink mealy bugs.	
January 1941 ..	21	11	22	110	Do. ..	Termites and pink mealy bugs but no Pyrilla.	
February 1941 ..	..	..	..	..	..	..	
March 1941 ..	4	1	4	20	Top, stem and root borers.	Pyrilla, mealy bugs and termites.	

Correspondence.—The section dealt with 5,746 letters during the year under report.

The staff of the section, as a whole, had put in strenuous services during the year due to the increased activities of the section and deserve my heart-felt thanks.

S. HEDAYETULLAH,

Economic Botanist to the Government of Bengal.

APPENDIX I-A.

DACCA FARM—BOTANICAL SECTION.

(PRELIMINARY TEST WITH EARLY VARIETIES.)

26 varieties 8 times replicated—area of sub-plot—1/220th acre.

Analysis of Variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	7	94,733·46	..	..	..	..
Treatment ..	25	46,687·01	1,867·48	..	..	3·45**
Error ..	175	94,691·41	541·09	23·26	8·22	..
Total ..	207	236,111·88	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Hashi-kalmi. 1	Saita (65). 2	Boalia saita (73,146). 3	P × L (3). 4	Harin-muda (517, 1034). 5	Dhakalam. 6	Motadhan (401, 802). 7
Maunds per acre ..	10·39	10·33	9·94	9·85	9·81	9·77	9·59
Per cent. ..	117·53	116·83	112·44	111·43	110·97	110·52	108·48

Grain.	K. P. O. (8). 8	Boalia (250). 9	Janjee (26, 52). 10	K. P. F. (8). 11	Bhusra Aus (29, 58). 12	K. P. F. (1). 13	Binnaful (27, 54). 14
Maunds per acre ..	9·58	9·56	9·54	9·26	9·24	9·07	8·97
Per cent. ..	108·37	108·14	107·92	104·75	104·52	102·60	101·47

Grain.	K. P. F. (6). 15	Bailabakri (64, 128). 16	Sholasaita (65, 130). 17	Chetki-saita (687, 1374). 18	K. P. F. (7). 19	Saitapa-rangee (71, 142). 20	Saita (86,172). 21
Maunds per acre ..	8·85	8·58	8·53	8·41	8·31	8·28	8·31
Per cent. ..	100·11	97·06	96·49	95·14	94·00	93·67	91·97

Grain.	Khunga (30, 60). 22	Dhalasaita (363, 726). 23	Farashi (25, 50). 24	Gorfa (46, 92). 25	Baulam (507, 1014). 26	General Mean. 27	Error. 28	Critical differnce. 29
Maunds per acre.	7·59	7·51	7·44	7·05	6·30	8·84	0·57	1·65
Per cent.	85·86	84·95	84·16	79·75	71·27	100	6·45	18·67

Conclusion :—1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 ,17, 18, 19, 20, 21, 22, 23, 24, 25, 26.

APPENDIX I-A.

AUS TEST (1940-41).

Eastern Circle.

DACCA FARM—BOTANICAL SECTION (EARLY TEST).

5 Varieties 8 times replicated—area of sub-plot—1/80th acre.

Analysis of Variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	7	10·58	..	..	..	..
Treatment ..	4	19·18	4·80	..	..	5·71**
Error ..	28	23·39	0·84	0·92	0·33	..
Total ..	39	53·15	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	P×S (8). 1	D × L. 2	Boalia. 3	Marich-beti. 4	Pukhi. 5	General Mean. 6	Error. 7	Critical difference. 8
Maunds per acre.	11·20	10·06	10·62	9·30	7·22	9·88	0·66	1·68
Per cent.	113·36	111·94	107·49	94·13	73·08	100·00	6·68	17·00

Conclusion :— 1, 2, 3, 4, 5.

APPENDIX I-A.

DACCA FARM—BOTANICAL SECTION (LATE TEST).

10 varieties 8 times replicated—area of sub-plot—1/80th acre.

Analysis of Variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	7	46·34	..	..	..	..
Treatment ..	9	48·95	5·44	..	..	5·44**
Error ..	63	63·21	100	1·00	0·36	..
Total ..	79	158·50	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Surjamukhi.	Katak-tara.	Larkoch.	Atlai.	Panbira.	Dala-saita.	Charnock.
	1	2	3	4	5	6	7
Maunds per acre ..	11 ·02	10 ·06	9 ·36	9 ·08	8 ·98	8 ·72	8 ·28
Per cent. ..	129 ·34	118 ·07	109 ·86	106 ·57	105 ·16	102 ·35	97 ·18

Grain.	Kumari.	Kalamgar.	Dharial.	General Mean.	Error.	Critical difference.
	8	9	10	11	12	13
Maunds per acre ..	8 ·06	6 ·06	5 ·70	8 ·52	0 ·72	2 ·00
Per cent. ..	94 ·60	71 ·13	66 ·81	100 ·00	8 ·45	23 ·47

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

DACCA FARM.

8 varieties 5 times replicated—area of sub-plot—1/50th acre.

Analysis of Variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X_2
Block ..	4	11 ·04	..	..	..	..
Treatment ..	7	7 ·59	1 ·08	..	..	1 ·38**
Error ..	28	21 ·83	0 ·78	0 ·88	0 ·39	..
Total ..	39	40 ·46	..	..	..	..

**Not significant.

Summary of results.

Grain.	P×S(8).	Panbira.	D × L.	Kumari.	Pukhi.	Dharial.
	1	2	3	4	5	6
Maunds per acre ..	6 ·25	5 ·50	5 ·50	5 ·00	4 ·87	4 ·87
Per cent. ..	123 ·27	108 ·48	98 ·62	98 ·62	96 ·05	96 ·05

Grain.	Marichbeti.	Surjamukhi.	General Mean.	Error.	Critical difference.
	7	8	9	10	11
Maunds per acre ..	4 ·87	4 ·25	5 ·07	0 ·49	1 ·44
Per cent. ..	96 ·05	83 ·83	100 ·00	9 ·66	23 ·40

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8

Faridpur Farm.

5 varieties 6 times replicated—area of sub-plot—1/30th acre.

Analysis of Variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	5	64·28	..	..	..	..
Treatment ..	4	245·06	61·26	..	..	4·84**
Error ..	20	253·20	12·66	3·56	1·45	..
Total ..	29	562·54	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Parangi.	Marich-beti.	D × L.	Pukhi.	P × S(8).	General Mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8
Maunds per acre.	13·50	9·00	8·02	8·01	7·90	9·28	1·09	3·75
Per cent.	145·47	97·00	86·42	86·31	85·13	100·00	11·75	40·01

Conclusion :— 1, 7 $\overline{2,\ 3,\ 4,\ 5}$.

Comilla Farm.

7 varieties 5 times replicated—area of sub-plot—1/45th acre.

Analysis of Variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	4	29·21	..	..	..	..
Treatment ..	6	222·44	37·07	..	..	12·96**
Error ..	24	70·71	2·95	1·72	0·77	..
Total ..	34	320·36	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Solai (Local). 1	Dharial. 2	Kataktara. 3	Dhalisaita. 4	Marichbeti. 5
Maunds per acre	18 ·67	14 ·46	13 ·16	11 ·87	10 ·86
Per cent.	146 ·32	113 ·32	103 ·13	93 ·03	85 ·11

Grain.	P × S (8). 6	D × L. 7	General Mean. 8	Error. 9	Critical difference. 10
Maunds per acre	10 ·52	9 ·80	12 ·76	0 ·87	2 ·48
Per cent.	82 ·45	76 ·80	100 ·00	6 ·82	19 ·44

Conclusion.— 1,7 2, 3, 4, 5, 6, 7.

MYMENSINGH FARM.

6 varieties 5 times replicated—area of sub-plot—1/40th acre.

Analysis of Variance.

Variance due to.—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	4	62 ·34	..	..	..	..
Treatment ..	5	273 ·77	54 ·75	..	..	5 ·59**
Error ..	20	196 ·06	9 ·80	3 ·13	1 ·40	..
Total ..	29	532 ·17	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Kataktara. 1	Dharial. 2	Chakulia. 3	P×S (8) 4	D×L. 5	Paspai. 6	General mean. 7	Error. 8	Critical difference. 9
Maunds per acre ..	30 ·40	28 ·00	27 ·60	26 ·00	24 ·00	21 ·00	26 ·17	1 ·40	4 ·14
Per cent. ..	116 ·16	106 ·99	105 ·46	99 ·35	91 ·71	80 ·24	100 ·00	5 ·35	15 ·52

Conclusion :— 1, 2, 3, 4, 5, 6.

Rajshahi Farm.

Northern Circle.

5 varieties 6 times replicated—area of sub-plot—1/40th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block	5	71 ·58	..	..	..	..
Treatment ..	4	240 ·76	60 ·19	..	..	15 ·43**
Error	20	78 ·15	3 ·91	1 ·98	0 ·81	..
Total ..	29	390 ·49	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Marich-beti (Dept.). 1	Kasia Panja. 2	Marich-beti (Local). 3	P × S(8). 4	Paspai. 5	General mean. 6	Error. 7	Critical difference. 8
Maunds per acre ..	19 ·33	17 ·33	16 ·12	13 ·96	11 ·10	15 ·57	0 ·81	2 ·38
Per cent.	124 ·15	111 ·30	103 ·53	89 ·66	71 ·29	100 ·00	5 ·20	15 ·28

Conclusion :— 1, 2, 3, 4, 5.

Dinajpur Farm.

4 varieties 5 times replicated—area of sub-plot—1/80th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	4	40 ·47	..	..	..	..
Treatment ..	3	206 ·55	68 ·65	..	..	32 ·38**
Error ..	12	25 ·47	2 ·12	1 ·46	0 ·65	..
Total ..	19	272 ·69	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Dharial. 1	Dwarika-raj. 2	Kataktara. 3	Marich-beti. 4	General mean. 5	Error. 6	Critical difference. 7
Maunds per acre ..	36 ·40	28 ·00	25 ·60	18 ·40	27 ·10	1 ·30	4 ·00
Per cent. ..	134 ·32	103 ·32	94 ·46	67 ·90	100 ·00	4 ·80	14 ·76

Conclusion :— 1, 2, 3, 4.

Bogra Farm.

5 varieties 8 times replicated—area of sub-plot—1/80th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	7	12·92	..	..	..	..
Treatment ..	4	40·17	10·42	..	..	41·68**
Error ..	28	6·66	0·24	0·43	0·18	..
Total ..	39	59·75	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Kumari.	Local India.	P×S (8)	Marich-beti.	D×L.	General mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8
Maunds per acre ..	14·18	12·06	11·46	10·76	8·16	11·20	0·36	3·24
Per cent.	126·60	107·68	102·32	90·71	72·86	100·00	3·21	28·93

Conclusion :— 1, 2, 3, 4. 5.

Rangpur Farm.

6 varieties 5 times replicated—area of sub-plot—1/45th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	4	8·97	..	..	..	..
Treatment ..	5	392·06	78·41	..	..	32·54**
Error ..	20	48·28	2·41	1·55	0·69	..
Total ..	29	449·31	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Dharial.	P×S (8).	Marich-bati.	Panbira.	D×L (28).	Sona-mail. (local).	General mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8	9
Maunds per acre ..	31·72	26·55	26·32	26·21	25·93	17·89	25·77	0·78	2·31
Per cent. ..	123·09	103·03	102·13	101·71	100·62	69·42	100·00	3·03	8·96

Conclusion :— 1, > 2, 3, 4, 5, > 6.

PABNA FARM.

5 varieties 5 times replicated—area of sub-plot—1/60th acre.

Analysis of variance.

Variance due to.—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block	4	15·49	..	..	..	..
Treatment ..	4	175·76	43·94	..	..	..
Error ..	16	86·33	5·40	2·32	1·04	8·14**
Total ..	24	277·58	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Dharial. 1	P×S (8). 2	Merich-beti. 3	D×L. 4	Kala-bakri. 5	General mean. 6	Error. 7	Critical differ-ence. 8
Maunds per acre ..	32·85	24·75	24·00	22·65	21·68	25·19	1·56	4·67
Per cent. ..	130·01	98·25	95·28	89·96	86·07	100·00	6·19	18·54

Conclusion :— 1, > $\overline{2.\ \ 3,\ \ 4,\ \ 5}$.

MYNAGURI FARM.

6 varieties 5 times replicated—area of sub-plot—1/50th—acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block	5	77·03	..	..	..	..
Treatment	5	207·56	41·51	..	..	3·75*
Error	25	274·65	10·99	3·31	1·35	..
Total ..	35	559·24	..	..	..	..

*Significant at 1 per cent. level.

Summary of results.

Grain	Dharial. 1	Kumari. 2	Katak-tara. 3	P×S (8). 4	Dhali. 5	D×L 6	General Mean. 7	Error. 8	Critical differ-ence. 9
Maunds per acre ..	24·50	22·50	20·62	19·79	19·27	14·79	20·24	1·69	4·91
Per cent. ..	121·05	111·16	101·88	97·78	95·21	70·60	100·00	8·35	24·26

Conclusion :— $\overline{1,\ \ \underline{2,\ \ 3,\ \ 4,\ \ 5,}}\ \ \overline{6}$.

Malda Farm.

4 varieties 6 times replicated—area of sub-plot—1/50th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block	5	20·41	..	..	..	..
Treatment	3	220·11	73·37	..	..	33·81**
Error	15	32·55	2·17	1·47	0·06	..
Total ..	23	273·07	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	D×L. 1	Marich-beti. 2	P×S(8). 3	Saita (Local). 4	General Mean. 5	Error. 6	Critical difference. 7
Maunds per acre ..	22·29	20·31	19·59	12·29	18·62	0·75	2·51
Per cent. ..	119·87	109·08	105·21	66·00	100·00	4·03	13·48

Conclusion :— 1, 2, 3, > 4.

Berhampore Farm (Early Test).

6 varieties 5 times replicated—area of sub-plot—1/35th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block	4	81·79	..	..	..	..
Treatment	5	336·73	67·35	..	..	9·62**
Error	20	58·98	7·95	2·82	1·26	..
Total ..	29	577·50	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Marich-beti. 1	Local Saita. 2	D×L. 3	Dhala Saita. 4	Pukhi. 5	P×S(8). 6	General Mean. 7	Error. 8	Critical difference. 9
Maunds per acre ..	20·82	18·81	15·84	13·56	13·52	13·12	15·94	1·10	3·24
Per cent. ..	130·61	118·00	99·37	85·07	84·82	82·31	100·00	6·96	20·30

Conclusion :— 1, 2, 3, 4, 5, 6.

Berhampore Farm (Late Test).

6 varieties 5 times replicated—area of sub-plot—1/35th acre.

Analysis of results.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block	4	51 ·38	..	..	..	..
Treatment	5	394 ·11	78 ·82	..	..	10 ·17**
Error	20	155 ·04	7 ·75	2 ·78	1 ·24	..
Total ..	29	600 ·45	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Baradana.	Panbira.	Kalamgar.	Kumari.	Dharial.	Paspai.	General Mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8	9
Maunds per acre ..	20 ·78	18 ·68	15 ·57	14 ·79	13 ·56	11 ·20	12 ·84	1 ·08	3 ·22
Per cent. ..	161 ·84	145 ·48	121 ·26	115 ·19	105 ·61	87 ·23	100 ·00	8 ·41	25 ·08

Conclusion :— 1, 2, 3, 4, 5, 6.

Krishnagar Farm.

4 varieties 7 times replicated—area of sub-plot 1/40th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block	6	305 ·42	..	..	..	..
Treatment	3	56 ·33	18 ·78	..	..	1 ·77**
Error	18	190 ·68	10 ·59	3 ·25	1 ·23	..
Total ..	27	552 ·43	..	..	..	..

**Not significant.

Summary of results.

Grain.	P × S(8).	Marichbeti.	D × L.	Saita.	General Mean.	Error.	Critical difference.
	1	2	3	4	5	6	7
Maunds per acre ..	21 ·55	20 ·04	18 ·20	18 ·14	19 ·48	1 ·23	3 ·65
Per cent. ..	110 ·63	102 ·87	93 ·43	93 ·12	100 ·00	6 ·31	18 ·74

Conclusion: — 1, 2, 3, 4.

BURDWAN FARM.

6 varieties 5 times replicated—area of sub-plot—1/40th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block	4	54 ·01	..	..	..	..
Treatment	5	102 ·35	20 ·47	..	..	8 ·28**
Error	20	49 ·33	2 ·47	1 ·57	0 ·70	..
Total ..	29	205 ·69	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Newali.	Jhanji.	Newachi.	Jata-kalma.	Bhut-mari.	Jhuloor.	General Mean.	Error.	Critical differ-ence.
	1	2	3	4	5	6	7	8	9
Maunds per acre ..	20 ·55	19 ·15	17 ·20	16 ·05	15 ·80	15 ·65	17 ·40	0 ·70	2 ·07
Per cent. ..	118 ·10	110 ·06	98 ·85	92 ·24	90 ·80	90 ·00	100 ·00	4 ·02	11 ·09

Conclusion :— 1, 2, 3, 4, 5, 6

APPENDIX I-B.

AMAN PADDY EXPERIMENT, DACCA FARM (1940-41).

"*Grains*" (*area of each unit plot—1/60th of an acre*).

9 strains × *5* (*in randomised blocks*).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block	4	60 ·05	16 ·01	..	..	2 ·95
Treatment	8	159 ·57	19 ·95	..	..	3 ·93**
Error	32	162 ·64	4 ·08	2 ·25	1 ·00	..
Total ..	44	382 ·26	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

——	Malati (Local).	D × I (13).	Indra-sail.	Bhasa-manik.	Dudsar.	Nagra.
	1	2	3	4	5	6
Weight in maunds per acre ..	22·87	21·00	20·80	19·80	19·80	19·05
Weight per cent.	121·00	111·11	109·52	104·76	104·76	100·79

——	Latisail.	Kartik-sinni.	$C_{23} \times R_{32}$	General mean.	Error.	Critical difference.
	7	8	9	10	11	12
Weight in maunds per acre ..	17·77	16·50	12·60	18·90	1·50	4·35
Weight per cent.	94·02	87·30	66·67	100	7·94	23·01

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9.

AMAN PADDY EXPERIMENT, DACCA FARM (1940-41).

"Straw" (area of each unit plot—1/60th of an acre).

9 strains × 5 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block	4	824·02	206·00	..	..	..
Treatment	8	2,727·20	342·15	..	..	7·14**
Error	32	1,532·58	47·89	6·92	3·09	..
Total ..	44	5,093·80	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

——	Malati (Local).	D×I.	Nagra.	Indrasail.	Dudsar.	Bhasa-manik.
	1	2	3	4	5	6
Straw in maunds per acre ..	82·20	76·20	71·10	69·60	69·60	58·50
Straw per cent.	128·26	118·89	110·94	108·60	108·60	91·28

——	$C_{23} \times R_{32}$	Latisail.	Kartik-sinni.	General mean.	Error.	Critical difference.
	7	8	9	10	11	12
Straw in maunds per acre ..	51·60	51·00	47·10	64·09	4·63	13·36
Straw per cent.	80·51	79·57	73·49	100	7·22	20·85

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9.

TEST OF LONG—STRIP PADDIES, BARISAL FARM (1940-41).

"Grains" (area of each unit plot—1/40th of an acre.)

5 strains × 5 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block	4	43 ·42	10 ·85	..	..	..
Treatment	4	530 ·03	132 ·51	..	..	15 ·91**
Error	16	133 ·33	8 ·33	2 ·89	1 ·29	..
Total ..	24	706 ·78	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

——	Chingrighusi No. 5.	Khiraijali. No. 8.	Cult. Chingrighusi.	Cult. Khiraijali.	Patnai 23.	General mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8
Weight in maunds per acre	28 ·15	27 ·54	27 ·49	26 ·59	16 ·00	25 ·15	1 ·29	3 ·87
Weight per cent. ..	111 ·93	109 ·50	109 ·30	105 ·72	63 ·62	100	6 ·13	15 ·39

Conclusion :— $\overline{1,\ 2,\ 3,\ 4,}$ 5.

Preliminary Test of Selected Aman Paddy Strains, Barisal Farm (1940-41).

"Grains" (weight of 100 plants in tolas).

20 strains × 7 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block	6	5,227·33	871·08	..	..	..
Treatment	23	58,815·20	2,557·18	..	..	3·46**
Error	138	102,076·96	739·69	27·20	10·30	..
Total ..	167	166,119·49	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

—	Patnai 7.	Chingri-ghusi.	Patnai.	Patnai 23.	Patnai 1.	Cult. Chingri-ghusi.	Indrasail
	1	2	3	4	5	6	7
Weight per 100 plants in tolas.	232·64	210·64	209·36	203·36	198·00	187·14	186·64
Weight per cent. ..	128·97	116·77	116·07	112·74	109·77	103·75	103·47

—	Chingri-ghusi No. 8.	Bansful No. 1.	Bansful No. 52.	Cult. Bansful.	Khirai-jali No. 8.	Khirai-jali. No. 9.	Bansful No. 5.
	8	9	10	11	12	13	14
Weight of 100 plants in tolas.	183·93	182·93	180·07	179·50	176·78	175·86	173·86
Weight per cent. ..	101·97	101·41	99·83	99·51	98·00	97·49	96·38

—	Hamai 197.	Bansful No. 7.	Bansful No. 3.	Cult. Khirai-jali.	Manar 56.	Khirai-jali. No. 2.	Sarisa-kani. 76.
	15	16	17	18	19	20	21
Weight of 100 plants in tolas.	173·43	172·64	171·36	170·71	168·57	162·07	161·34
Weight per cent. ..	96·15	95·71	95·00	94·64	93·45	89·85	89·49

—	Khirai-jali. No. 1.	Khirai-jali. No. 55.	Chingri-ghusi. No. 5.	General Mean.	Error.	Critical difference.
	22	23	24	25	26	27
Weight of 100 plants in tolas ..	157·78	156·93	153·57	180·38	10·30	27·85
Weight per cent.	87·47	87·00	85·14	100	5·71	15·94

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24.

Aman Paddy Experiment, Mymensingh Farm (1940-41).

"Grains" (area of each unit plot—1/50th of an acre).

4 strains × 8 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block	7	36·75	5·25	..	..	..
Treatment	3	33·25	11·08	..	..	4·31**
Error	21	54·00	2·57	1·60	0·56	..
Total ..	31	124·00	..	..	..	..

**Significant at 5 per cent. level.

Summary of results.

Grain.	Bhasamanik.	Dudsar.	Latisal.	Biroi (Local).	General mean.	Error.	Critical difference.
	1	2	3	4	5	6	7
Maunds per acre ..	14·06	12·65	11·09	10·94	12·19	0·70	2·07
Per cent. ..	115·34	103·77	90·98	89·74	100	5·74	17·02

Conclusion :— 1, 2, 3, 4.

Remarks.—Double crop—after *aus*. The crop was affected a great deal due to drought.

Aman Paddy Experiment, Comilla Farm (1940-41).

"Grains" (area of each unit plot—1/30th of an acre).

5 strains × 6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block	5	63·34	12·67	..	..	1·12
Treatment	4	219·33	54·83	..	..	4·87**
Error	20	224·90	11·25	3·35	1·37	..
Total ..	29	507·57	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Tilakkacheri.	Indrasail.	Latisail.	Chaplash (Local).	Bhasamanik.	General mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8
Maunds per acre ..	29·50	27·50	25·42	25·16	23·69	26·25	1·03	3·07
Per cent.	112·38	104·76	96·84	95·85	90·25	100	3·92	11·71

Conclusion :— 1, 2, 3, 4, 5.

EARLY AMAN PADDY EXPERIMENT, RAJSHAHI FARM (1940-41).

"Grains" (area of each unit plot—1/40th of an acre).

4 strains × 5 (in ramdomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	4	2·32	·58	..	..	..
Treatment ..	3	138·84	46·28	..	..	58·58**
Error ..	12	9·46	0·79	·89	·39	..
Total ..	19	150·62	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Boldar. 1	$C_{22} \times R_{22}$. 2	Jhulan (local). 3	Badkalamkathi (65). 4	General mean. 5	Error. 6	Critical difference. 7
Maunds per acre ..	11·26	9·21	5·59	4·81	7·72	0·39	1·22
Per cent. ..	145·85	119·30	72·41	62·30	1·00	5·05	15·80

Conclusion :— 1, > 2, > $\overline{3,\ 4}$.

Remarks.—Outturn is low due to insufficient and late rainfall.

EARLY AMAN PADDY EXPERIMENT, RAJSHAHI FARM (1940-41).

"Straw" (area of each unit plot—1/40th of an acre).

4 strains × 5 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	4	6·33	1·58	..	..	..
Treatment ..	3	48·24	16·08	..	..	15·31**
Error ..	12	12·57	1·05	1·02	0·46	..
Total ..	19	67·14	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

——	Boldar. 1	Jhulan (local). 2	$C_{22} \times R_{22}$ 3	Badkalamkathi (65). 4	General mean. 5	Error. 6	Critical difference. 7
Straw in maunds per acre.	18·20	18·00	16·80	14·30	16·82	0·46	1·42
Straw per cent. ..	108·20	107·01	99·88	85·02	100	2·73	8·44

Conclusion :— $\overline{1,\ 2,\ 3}$, > 4.

Late Aman Paddy Experiment, Rajshahi Farm (1940-41).

"Grains" (Area of each unit plot—1/50th of an acre).

6 strains × 6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	5	48·20	9·64	..	..	..
Treatment ..	5	81·69	16·34	..	..	13·39**
Error ..	25	30·47	1·22	1·10	0·45	..
Total ..	35	160·36	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Bhasa-manik. 1	D × I. 2	Indra-sail. 3	Dudsar. 4	Jhinga-sail. 5	Elai (local). 6	General mean. 7	Error 8	Critical difference. 9
Maunds per acre ..	12·04	11·96	11·24	9·51	9·12	6·71	10·10	0·56	1·64
Per cent. ..	119·21	118·41	111·29	94·16	90·30	66·44	100	5·54	16·24

Conclusion—1, 2, 3, > 4, 5, > 6.

Remarks :—Outturn is very low due to insufficient and late rainfall.

Late Aman Paddy Experiment, Rajshahi Farm (1940-41).

"Straw" (area of each unit plot—1/50th of an acre).

6 strains × 6 (in randomised blocks).

Analysis of Variance.

Variation due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	5	185·39	37·08	..	..	..
Treatment ..	5	132·39	26·48	..	..	7·63**
Error ..	25	86·69	3·47	1·86	0·76	..
Total ..	35	404·47	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

—	Bhasa-manik. 1	Indra-sail. 2	D × I. 3	Dudsar. 4	Jhinga-sail. 5	Elai (local). 6	General mean. 7	Error. 8	Critical difference. 9
Straw in maunds per acre.	22·71	21·25	20·72	18·12	17·40	15·84	19·34	0·95	2·76
Straw per cent. ..	117·42	109·87	107·13	93·69	89·97	81·90	100	4·91	14·29

Conclusion :— 1, 2, 3. 4, 5, 6.

AMAN PADDY EXPERIMENT, MAYNAGURI FARM (1940-41).

"Grains" (area of each unit plot—1/40th of an acre).

7 strains × 6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis X.
Block ..	5	274·76	54·95	..	..	..
Treatment ..	6	74·05	12·34	..	..	0·63**
Error ..	30	587·69	19·59	4·43	1·81	..
Total ..	41	936·50	..	..	..	..

**Not significant.

Summary of results.

—	Agandali (local). 1	Jhingasail. 2	Dudsar. 3	Indrasail. 4	Latisail. 5
Weight in maunds per acre.	25·83	23·33	23·00	22·62	22·50
Weight per cent. ..	112·55	101·65	100·25	98·56	8·04

—	Nagra. 6	Bhasamanik. 7	General mean. 8	Error. 9	Critical difference. 10
Weight in maunds per acre.	22·12	21·25	22·95	1·81	5·22
Weight per cent. ..	96·38	92·60	100	7·89	22·74

Conclusion :— Difference not significant.

Aman Paddy Experiment, Dinajpur Farm (1940-41).

"Grains" (area of each unit plot—1/45th of an acre).

6 strains × 6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	5	57 ·36	11 ·47	..	..	..
Treatment ..	5	106 ·56	21 ·31	..	..	3 ·63**
Error ..	25	146 ·66	5 ·87	2 ·42	0 ·99	..
Total ..	35	310 ·58	..	..	..	..

**Significant at 5 per cent. level.

Summary of results.

Grain.	Bhasa-manik.	Nagra.	Dud-kalma (local).	Latisail.	Indra-sail.	Dudsar.	General mean.	Error.	Critical differ-ences.
	1	2	3	4	5	6	7	8	9
Maunds per acre ..	36 ·37	34 ·12	32 ·43	31 ·31	31 ·13	31 ·13	32 ·75	1 ·11	3 ·24
Per cent. ..	111 ·05	104 ·18	99 ·02	95 ·60	95 ·05	95 ·05	100	3 ·39	9 ·89

Conclusion :— 1, 2, 3, 4, 5, 6.

Aman Paddy Experiment, Dinajpur Farm (1940-41).

Straw yield (area of each unit plot—1/45th acre).

6 strains×6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	5	355 ·15	71 ·03	..	..	..
Treatment ..	5	537 ·48	107 ·50	..	..	7 ·36**
Error ..	25	365 ·06	14 ·60	3 ·82	1 ·56	..
Total ..	35	1,257 ·69	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

——	Bhasa-manik.	Nagra.	Indra-sail.	Dudsar.	Dud-kalma.	Latisail.	General Mean.	Error.	Critical differ-ences.
	1	2	3	4	5	6	7	8	9
Straw in maunds per acre.	43 ·49	41 ·99	38 ·97	37 ·69	37 ·12	29 ·88	38 ·20	1 ·75	5 ·13
Straw per cent. ..	113 ·85	109 ·92	102 ·01	98 ·66	97 ·17	78 ·22	100	4 ·58	13 ·40

Conclusion :—1, 2, 3, 4, 5, 6.

AMAN PADDY EXPERIMENT, BOGRA FARM (1940-41).

"Grains" (area of each unit plot—1/60th of an acre).

6 strains × 6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis X.
Block ..	5	526·56	105·31	..	..	
Treatment ..	5	7·16	1·43	..	..	0·72**
Error ..	25	49·16	1·97	1·40	0·57	
Total ..	35	582·88	..	..	..	..

**Not significant.

Summary of results.

Grain.	Bhasa-manik.	Jhinga-sail.	Dudsar.	Indra-sail (local).	Latisail.	Indra-sail Deptt.	General Mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8	9
Maunds per acre.	19·24	18·58	18·00	17·53	17·49	17·43	18·04	0·85	2·50
Per cent. ..	106·65	102·99	99·78	97·17	96·95	96·62	100	4·71	13·89

Conclusion :— Differences not sig[illegible]

Aman Paddy Experiment, Burdwan Farm (1940-41).

" Grains " (area of each unit plot—1/40th of an acre).

8 strains × 6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	5	314·86	62·97	..	..	15·51
Treatment ..	7	193·92	27·70	..	..	6·82**
Error ..	35	142·14	4·06	2·01	0·82	..
Total ..	47	650·92	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	Jhingasail.	Bhasamanik.	Patnai (23).	Nagra.	Dudsar.	Dudkalma (local).
	1	2	3	4	5	6
Maunds per acre ..	31·50	30·67	30·00	29·83	28·83	27·67
Per cent. ..	109·41	106·53	104·20	103·61	100·14	96·11

Grain.	Latisail.	Jatakalma (local).	General Mean.	Error.	Critical difference.
	7	8	9	10	11
Maunds per acre ..	26·67	25·17	28·79	0·82	2·35
Per cent. ..	92·64	87·43	100	2·85	8·16

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8

Aman Paddy Experiment, Burdwan Farm (1940-41).

"Straw" (area of each unit plot—1/40th acre).

8 strains × 6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	5	794 ·00	158 ·80	..	..	14 ·74
Treatment ..	7	368 ·25	52 ·61	..	..	4 ·88**
Error ..	35	377 ·00	10 ·77	3 ·28	1 ·34	..
Total ..	47	1,539 ·25	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

—	Jhingasail. 1	Patnai (23). 2	Bhasamanik. 3	Nagra. 4	Latisail. 5	Dudsar. 6
Straw in maunds per acre.	48 ·00	48 ·00	47 ·67	46 ·83	43 ·67	43 ·67
Straw per cent. ..	106 ·38	106 ·38	105 ·65	103 ·79	96 ·79	96 ·79

—	Dudkalma (local). 7	Jatakalma (local). 8	General Mean. 9	Error. 10	Critical difference. 11
Straw in maunds per acre.	43 ·33	39 ·83	45 ·12	1 ·34	3 ·84
Straw per cent. ..	96 ·03	88 ·27	100	2 ·97	8 ·51

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8.

PRELIMINARY TEST OF EARLY FLOWERING AMAN PADDY STRAIN.

BOTANICAL SECTION, DACCA FARM (1940-41).

"Grains" (weight of 100 plants in tolas).

14 strains × 10 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	9	3,963·69	440·41	..	..	2·56
Treatment ..	13	23,094·49	1,776·50	..	..	10·31**
Error ..	117	201,551·51	172·23	13·12	4·15	..
Total ..	139	47,209·69	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

—	Blue-stick.	Nagra 41/14.	Jeshobalam.	Nirbhoy (Dacca).	D×I (34).	Jhingasail.
	1	2	3	4	5	6
Weight of 100 plants in tolas.	139·30	131·90	127·60	122·80	114·90	112·70
Weight per cent. ..	124·23	117·63	113·80	109·51	102·47	100·51

—	Gazia (Rajshahi).	Kartick-sail (Dinaj-pur).	Chinsurah (72).	Karticksinni (Pureline).	D×I (36).	Karticksail (Dacca).
	7	8	9	10	11	12
Weight of 100 plants in tolas.	110·90	108·60	106·90	105·00	102·10	97·20
Weight per cent. ..	98·90	96·85	95·33	93·64	91·05	86·68

—	Boldar (Chinsurah).	$C_{22} \times R_{22}$.	General Mean.	Error.	Critical difference.
	13	14	15	16	17
Weight of 100 plants in tolas.	95·60	93·30	112·13	4·15	11·64
Weight per cent. ..	85·26	83·21	100	3·70	10·38

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14.

Preliminary Test of Selected Medium and late Flowering Aman Paddy Strain.

Botanical Section, Dacca Farm (1940-41).

"Grains" (waight of 100 plants in tolas).

20 strains × 10 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S.E.	Mahalanobis X.
Block ..	9	9,030·28	1,003·36	..	..	5·46
Treatment ..	19	33,879·18	1,783·11	..	..	7·02**
Error ..	171	43,444·12	254,07	15·94	5·04	..
Total ..	199	86,353·58	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

	Amandhan Misc. 20. 1	Latisail S—22. 2	Bhasamanik. 3	Tilakkacheri. 4	Latisail. 5	Selection No. 19. 6
Weight of 100 plants in tolas.	154·10	151·30	148·20	147·50	145·50	144·40
Weight per cent. ..	116·20	114·09	111·76	111·23	109·72	108·89

	D×I (126). 7	1353. 8	1351. 9	Selection No. 1. 10	D×I (9). 11	Indrasail. 12
Weight of 100 plants in tolas.	144·00	136·40	134·10	130·20	129·80	125·50
Weight per cent. ..	108·59	102·86	101·12	98·18	97·88	94·64

	Dudsar. 13	1798. 14	British Guina. 15	Bhogdhan (Rajshahi). 16	Manikraj (Comilla). 17	1314. 18
Weight of 100 plants in tolas.	124·40	123·90	123·10	122·90	122·40	121·90
Weight per cent. ..	93·81	93·43	92·83	92·68	92·30	91·92

	Sindurmukhi (Bankura). 19	Manikkalma. 20	General Mean. 21	Error. 22	Critical difference. 23
Weight of 100 plants in tolas.	119·70	102·90	132·61	5·04	14·05
Weight per cent. ..	90·26	77·59	100	3·80	10·59

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 7 20.

PRELIMINARY TEST OF HYBRID STRAINS.

BOTANICAL SECTION, DACCA FARM (1940-41).

"Grains" (weight of 100 plants in tolas).

14 strains × 10 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	9	23,923·07	2,658·12	..	..	2·56
Treatment ..	13	63,204·13	4,861·86	..	..	4·68**
Error ..	117	121,429·23	1,037·86	32·21	10·19	..
Total ..	139	208,556·43	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

—	J×L 387/5/298. 1	L×D 226/1/105. 2	Latisail. 3	L×D 241/2/19 4	J×L 227/5/4 5	I×P 189/9/20 6	I×P. 177/9/28 7	J×L 275/5/20 8
Weight of 100 plants in tolas	171·80	160·80	151·20	147·30	144·30	134·70	130·50	128·50
Weight per cent. ..	130·71	122·35	115·04	112·07	109·79	102·49	99·29	97·77

—	I×P 194/9/289. 9	Dudsar. 10	L×D 260/2/259. 11	Indrasail. 12	Patnai 23. 13	Jhingasail. 14	General mean. 15	Error. 16	Critical difference. 17
Weight of 100 plants in tolas	124·20	119·80	117·50	112·20	106·50	91·00	131·43	10·19	28·57
Weight per cent. ..	94·50	91·15	89·40	85·37	81·03	69·24	100	7·75	21·74

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14.

Comparative Test.

Botanical Section, Dacca Farm (1940-41).

"Grains" (area of each unit plot—5/2278th of an acre).

3 strains × 10 (in randomised blocks)—Variety—Indrasail.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	9	32,345 ·87	3,593 ·98	..	..	2 ·64
Treatment ..	2	4,394 ·60	2,197 ·30	..	..	1 ·61**
Error ..	18	24,528 ·82	1,362 ·71	36 ·91	11 ·68	..
Total ..	29	61,269 ·29	..	..	..	..

**Not significant.

Summary of results.

Grain.	Dinajpur. 1	Rajshahi. 2	Dacca. 3	General Mean. 4	Error. 5	Critical difference. 6
Maunds per acre	35 ·22	34 ·55	31 ·28	33 ·68	1 ·66	4 ·94
Per cent.	104 ·57	102 ·58	92 ·87	100	4 ·93	14 ·67

Conclusion :—Difference not significant.

Comparative Test.

Botanical Section, Dacca Farm (1940-41).

"Grains" (area of each unit plot—5/2278th of an acre).

3 strains × 10 (in randomised blocks—Variety—Dudsar.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	9	10,983 ·20	1,220 ·35	..	..	1 ·08
Treatment ..	2	3,198 ·60	1,599 ·30	..	..	1 ·42**
Error ..	18	20,309 ·40	1,128 ·30	33 ·59	10 ·63	..
Total ..	29	34,491 ·20	..	..	..	..

**Not significant.

Summary of results.

Grain.	Dinajpur. 1	Rajshahi. 2	Dacca. 3	General Mean. 4	Error. 5	Critical difference. 6
Maunds per acre	36 ·97	36 ·38	33 ·60	35 ·65	1 ·51	4 ·49
Per cent.	103 ·70	102 ·05	94 ·25	100	4 ·24	12 ·59

Conclusion :— 1, 2, 3, 7 4.

WEEDING *versus* NO-WEEDING.

BOTANICAL SECTION, DACCA FARM (1940-41).

"Grains" (weight of 100 plants in tolas).

4 treatment × 8 (in randomised blocks) Variety—Tilakkacheri.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	7	7,481·47	1,120·21	..	..	..
Treatment ..	3	1,670·34	556·78	..	..	5·41**
Error ..	21	2,161·41	102·92	10·14	3·58	..
Total ..	31	11,673·22	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

——	One weeding. 1	Two weedings. 2	Three weedings. 3	No weeding. 4	General Mean. 5	Error. 6	Critical difference. 7
Weight of 100 plants in tolas ..	109·50	108·00	108·00	91·87	104·34	3·58	10·54
Weight per cent. ..	104·94	103·51	103·51	88·05	100	3·44	10·10

Conclusion :— $\overline{1,\ 2,\ 3,}$ 7 4.

WEEDING *versus* NO-WEEDING.

BOTANICAL SECTION, DACCA FARM (1940-41).

Straw yield—Variety—Tilakkacheri.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Variance.	S. D.	S. E.	Mahalanobis' X.
Block ..	7	53,955·72	7,707·96	..	..	14·93
Treatment ..	3	9,610·09	3,203·36	..	..	6·20**
Error ..	21	10,840·66	516·22	22·72	8·03	..
Total ..	31	74,406·47	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

——	One weeding. 1	Two weedings. 2	No weeding. 3	Three weedings. 4	General Mean. 5	Error. 6	Critical difference. 7
Weight of 100 plants in tolas ..	235·50	203·00	193·75	192·87	206·28	8·03	23·63
Weight per cent. ..	114·16	98·41	93·92	93·50	100	3·89	11·45

Conclusion :— 1, 7 $\overline{2,\ 3,\ 4.}$

APPENDIX I-C.

MEDIUM DEEP-WATER PADDY EXPERIMENT.

DACCA FARM (1940-41).

"Grains" (area of unit plot—1/110th of an acre).

5 strains × 6 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	S. D.	S. E.	Value of X.
Block ..	5	8·54	..	..	..	..
Treatment ..	4	64·29	16·07	..	..	7·30**
Error ..	20	43·99	2·20	1·48	0·60	..
Total ..	29	116·82	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

—	Baish-bish.	Gatak.	Gabura.	Lalkanai.	Dulai.	General Mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8
Weight in maunds per acre ..	30·55	29·07	27·69	22·55	20·02	25·99	1·65	4·90
Weight per cent. ..	117·54	115·70	106·58	86·76	77·03	100·00	6·35	18·85

Conclusions :— $\overline{1,\ 2,\ 3,} > \overline{4,\ 5.}$

Medium Deep-Water Paddy Experiment.

Malda Farm (1940-41).

"Grains" (area of unit plot—1/132th of an acre).

6 strains × 5 (in randomised blocks).

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of square.	Mean squares.	S. D.	S. E.	Value of X.
Block	4	27·70	..	..	..	..
Treatment ..	5	17·22	3·44	..	..	0·91*
Error	20	73·31	3·77	1·94	0·87	
Total ..	29	120·23	..	..	..	..

*Not significant.

Summary of results

Grain.	Dulia.	Gatak.	Gabura.	Baish-bish.	Lal-kani.	Local Sungail.	General mean.	Error.	Critical difference.
	1	2	3	4	5	6	7	8	9
Maunds per acre.	19·70	16·33	14·25	14·28	13·72	11·58	15·08	2·87	8·42
Per cent. ..	130·64	108·29	97·81	94·69	90·98	76·89	100·00	19·03	55·84

Conclusion :— Differences are not significant.

N.B.—The outturns are very poor owing to the following reasons :—

(1) Deep-water condition was not satisfied.

(2) Some plots were heavily damaged by rats.

APPENDIX I-D.

STATEMENT SHOWING THE VALUE OF FERTILISER WITH THE VALUE OF INCREASED YIELD OBTAINED IN THE COMPLEX MANURIAL EXPERIMENT, CHINSURAH, 1940-41.

—	Mean yield of grain per plot (1/66th acre) in ounces.	Mean yield of straw per plot in ounces.	Yield per acre in pounds.		Value of average years.		Total value.
			Grain.	Straw.	Grain at Rs. 2-4 per 82 lbs.	Straw at 7 annas per 82 lbs.	
					Rs. a. p.	Rs. a. p	Rs. a. p.
N_0 (No Nitrogen)	468·33	587·00	1,932	2,421	53 0 0	12 14 9	65 14 9
N_1 (20 lbs Nitrogen per acre) in the form of sulphate of Ammonia.	521·22	740·08	2,150	3,053	58 15 0	16 4 6	75 3 6
N_2 (40 lbs. Nitrogen per acre) Sulphate of Ammonia.	593·63	985·30	2,449	4,064	67 3 0	21 11 0	88 14 0
P_0 (N_0 P_2 OS)	514·50	733·00	2,122	3,023	58 3 6	16 2 0	74 5 6
P_1 (20lbs. P_2 O_5 per acre) Double Super-Phos.	514·63	750·02	2,123	3,094	58 4 0	16 8 0	74 12 0
P_2 (40 lbs P_2 OS per acre) Double Super-Phos.	554·05	829·36	2,285	3,421	62 11 0	18 4 0	80 15 0

—	Value on current year.		Total value.	Fertilisers required per acre.	Vaule.	Value of increased yield due to application of manure.		Net profit or loss.	
	Grain at Rs. 3 per 82 lbs.	Straw at 11 annas per 82 lbs.				Average years.	Current years.	Average years.	Current years.
	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
N_0 (No Nitrogen)	70 11 0	20 4 9	19 15 9	Nil	Nil	..	..	..	..
N_1" (20 lbs. Nitrogen per acre) in the form of sulphate of Ammonia.	78 10 6	25 9 6	104 4 0	99 lbs. Am. Suph.	7 14 6	9 4 9	13 4 3	1 6 6	5 6 0

N_2 (40 lbs Nitrogen per acre) Sulphate of Ammonia.	89 9 0	34 1 0	123 10 0	198 lbs. Am. Sulph.	15 12 6	22 15 3	32 10 3	7 2 9	16 13 9
P_0 (N_0 P_2 OS)	77 10 0	25 5 6	102 15 6	Nil	Nil	..	..	..	..
P_1 (20 lbs. P_2 O_5 per acre) Double Super-Phos.	77 12 0	25 15 0	103 9 6	55 lbs 11oz. Double Sup. Phos.	8 5 6	0 5 6	0 10 0	7 15 0	7 11 6
P_2 (40 lbs P_2 OS per acre) Double Super-Phos.	83 9 0	28 11 0	112 4 0	111 lbs. 6 oz. Double sup. Phos.	16 11 0	6 9 6	9 4 6 (10 1 6)	..	7 6 6

Chinsurah Farm—Rice Research Section.

Preliminary Aus Test.

11 varieties 12 times replicated (randomised blocks).

Area of sub-plot—8′ 3″ × 8′ 3″.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean squares.	Mahalanobis' X.
Block	11	592·25	53·84	....
Treatment	10	4,429·33	442·93	15·10
Error	110	3,226·17	29·32	....
Total ..	131	8,247·75	....	....

Summary of results.

Grain.	Jhanji 34. 1	Bhutmuri 36. 2	Sona-mukhi. 3	*Aus* col. No. 11. 4	Kele pure. 5	Saruaus. 6	Surja-mukhi. 7
Mean yield in ounces	41·45	39·00	31·83	31·58	31·29	30·20	30·00
Per cent.	134·79	126·82	103·51	102·69	101·75	98·21	97·56

Grain.	Kele (local). 8	*Aus* col. No. 1. 9	Dhairal. 10	Bansmati U. P. 11	General mean. 12	Standard error. 13
Mean yield in ounces	29·08	28·12	27·75	17·91	30·75	1·56
Per cent. ..	94·56	91·44	90·24	58·24	110·00	5·07

Chinsurah Farm—Rice Research Section.

Preliminary Early Aman Test.

12 varieties 12 times replicated (randomised blocks).

Area of sub-plot—8′ 3″ × 8′ 3″.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	Mahalanobis' X.
Block	11	1,705·73	155·06	....
Treatment	11	6,074·23	552·20	36·56
Error	121	1,837·46	15·10	....
Total ..	143	9,607·42	....	....

Summary of results.

Grain.	Dudsar.	Jhingasail.	Nagra 41/14.	Bhonja 40.	Boldar	Jata kalma 164.	Latisail.
	1	2	3	4	5	6	7
Mean yield in ounces	52·45	52·33	46·45	46·33	46·00	45·95	44·95
Per cent. ..	121·36	121·07	107·47	107·19	106·43	106·08	104·00

Grain.	D × I 34.	Nehara red.	Rajasail.	Nehara local.	Badkalam-kati 65.	General mean.	Standard error.
	8	9	10	11	12	13	14
Mean yield in ounces	41·66	38·95	38·25	63·62	28·70	43·22	1·11
Per cent. ..	96·39	90·12	88·50	84·72	66·40	100·00	2·56

Chinsurah Farm—Rice Research Section.

Preliminary Medium Aman Test.

30 varieties 12 times replicated (randomised blocks).

Area of sub-plot—8′ 3″ × 8′ 3″.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of square.	Mean squares.	Mahalanobis' L
Block	11	1,851·14	168·28	....
Treatment	29	30,766·23	1,060·90	21·25
Error	319	15,922·57	49·91	....
Total ..	359	48,539·94	....	....

Summary of results.

Grain.	Kalamkati 147. 1	Bhasamanik. 2	Patnai 7 Gosaba. 3	Rangi 476. 4	Patnai 298. 5	Patnai 457. 6	Patnai 562. 7	Patnai 89 8
Mean yield in ounces ..	62·75	62·33	62·33	61·29	58·41	58·41	57·75	57·00
Per cent.	126·74	125·89	125·89	123·79	117·97	117·97	116·64	115·12

Grain.	Patnai local. 7	Patnai 637. 8	Patnai 23. 9	Nagra 41/14. 10	Nagra 68/6. 11	Kalma 219. 12	Dohar Nagra. 13	Sadamota 551. 14
Mean yield in ounces ..	55·50	55·00	52·50	51·87	51·45	51·20	50·91	50·70
Per cent.	112·09	111·08	106·03	104·76	103·91	103·41	102·82	102·40

Grain.	Kalma 222. 15	Latasal 91. 16	Nonabon gora. 17	Bhasakalma. 18	Dudkalma 189. 19	Indrasail. 20	Seetasail 499. 21	Jatakalma. 22
Mean yield in ounces ..	50·50	48·16	47·87	45·25	45·16	44·66	44·00	43·87
Per cent.	101·99	97·27	96·68	91·39	91·21	90·20	88·87	88·60

Grain.	Nonaramsail. 23	Dudshar. 24	Jhingasail. 35	Boldar. 36	Sindurmukhi. 27	Nagra (local.) 28	General mean. 29	Standard error. 30
Mean yield in ounces ..	47·70	41·87	41·33	37·41	28·79	23·33	49·51	2·03
Per cent.	88·26	84·56	83·47	75·56	58·14	47·12	100·00	4·10

Chinsurah Farm—Rice Research Section.

Preliminary Late Aman Test.

30 varieties 8 times replicated (randomised blocks).

Area of sub-plot—8′ 3″ × 8′ 3″.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	Mahalanobis' X.
Block	7	2,357·52	336·79	....
Treatment	29	3,980·05	137·24	3·84
Error	203	7,243·92	35·68	....
Total ..	239	13,581·49	....	....

Summary of results.

Grain.	Tilak-kachary.	Dudgotail 1571/38.	Kalamocha 1664/37.	A-28/6.	C 27-21.	E 30-40.	Harimai 1393/37.
	1	2	3	4	5	6	7
Mean yield in ounces ..	46·37	45·06	45·00	43·06	41·25	41·25	41·00
Per cent. ..	122·54	119·08	118·92	113·79	109·48	109·01	108·35

Grain.	Rajabhog.	Ramsail (local.)	Sailot 1580/37.	Yellow kothya 1648/37.	Taungde igpan. T20/123.	Laophala 1356/34.	Kumar-1475/38.
	8	9	10	11	12	13	14
Mean yield in ounces ..	40·93	40·12	40·06	39·75	39·43	39·12	38·12
Per cent. ..	108·17	106·05	105·86	105·04	104·20	103·38	100·73

Grain.	Co-3.	Asra 108/1.	Hogla 1483/38.	Malabati 1561/17.	A 26/3.	Kumargar 1562/36.	Gandha kasturi 1642/38.
	15	16	17	18	19	20	21
Mean yield in ounces	37·56	37·43	37·06	36·68	36·12	35·62	35·00
Per cent. ..	99·26	98·92	97·93	96·93	95·45	94·13	92·49

Grain.	Ghrita kanchan 1575/38.	E 27-57.	Ngatha AR 10/9.	Malabati 1568/37.	Jamai maru 156/38.	Chapasail. 1669/37.	Gakulgan 1702/37.
	22	23	24	25	26	27	28
Mean yield in ounces	34·87	34·81	34·25	34·18	33·50	33·31	32·87
Per cent. ..	92·15	91·99	90·51	90·32	88·58	88·08	86·91

Grain.	Nilamoti Patnai 810/37.	Khaidhan 1705/37.	General mean.	Standard error.
	29	30	31	32
Mean yield in ounces	31·06	30·12	37·84	2·11
Per cent. ..	82·13	79·59	100·00	5·54

Chinsurah Farm—Rice Research Section.

Preliminary Fine and Scented Aman Test.

22 varieties 9 times replicated (randomised blocks).

Area of sub-plot—8′ 3″ × 8′ 3″.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	Mahalanobis'
Block	8	4,647·53	580·94	....
Treatment	21	875·88	41·70	1·9
Error	168	3,754·92	22·35	....
Total ..	197	9,278·33	....	....

Summary of results.

Grain.	Ginnipagla 970/38.	Hatisail 962/38.	Seetabhog 883/38.	Badsabhog 898/38.	Parbatchura. 1510/38.	Lillaboti. 905/38.
	1	2	3	4	5	6
Mean yield in ounces ..	37·22	36·77	36·77	36·00	35·88	35·00
Per cent.	109·85	108·53	108·53	106·22	105·90	104·78

Grain.	Kaminisail 950/38.	Basful 1520/38.	Jirasail 881/38.	Basmoti 948/38.	Bholajora 942/38.	Kataribhog 941/38.
	6	7	8	9	10	11
Mean yield in ounces ..	35·33	35·16	34·66	34·55	34·38	34·05
Per cent.	104·27	103·77	102·30	101·97	101·47	100·50

Grain.	Dadshahi 910/38.	Danaguri 896/38.	Kaminisaru 993/38.	Chataimukhi 882/38.	Radhunipagal 880/38.	Lilaboti 908/38.
	12	13	14	15	16	17
Mean yield in ounces ..	33·66	33·33	33·27	32·22	32·05	31·66
Per cent.	99·35	98·37	98·19	95·10	94·59	93·44

Grain.	Kanakchur 994/38.	Gobindabhog 936/38.	Kajalsail 883/38.	Gobindabhog 906/38.	General mean.	Standard error.
	18	19	20	21	22	23
Mean yield in ounces ..	31·66	30·83	30·33	30·05	33·88	1·57
Per cent.	93·44	90·99	89·52	88·69	100·00	4·63

Chinsurah Farm—Rice Research Section.

Field Scale Aus Test.

5 varieties 8 times replicated (randomised blocks).

Area of sub-plot—8′ 3″ × 8′ 3″.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	Mahalanobis' X.
Block	7	61,123·78	8,731·96	....
Treatment	4	1,22,254·85	30,563·71	23·35
Error	28	36,646·35	1,308·79	....
Total ..	39	2,20,024·98	....	....

Summary of results.

Grain.	Bhut-muri 36.	Jhanji 34.	Kele (local).	Kele (pure).	Dhairal.	General mean.	Standard error.
	1	2	3	4	5	6	7
Mean yield in ounces	828·37	813·12	752·50	748·25	672·62	762·97	12·79
Per cent.	108·57	106·49	98·61	98·07	88·15	100·00	1·67
Pounds per acre	2,070·92	2,032·80	1,881·25	1,870·62	1,681·55	1,907·42	31·97

Chinsurah Farm—Rice Research Section.

Field Scale Aman Test.

12 varieties 12 times replicated (randomised blocks).

Area of sub-plot—60″ × 11″ (1/66th acre.)

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	Mahalanobis' X.
Block	11	174,707·89	15,882·53	....
Treatment	11	242,150·22	22,013·65	11·12
Error	121	239,526·45	1,979·55	....
Total ..	143	656,384·56	....	....

Summary of results.

Grain.	Latisail.	Patnai (local).	Bhasa-manik.	Kalma 222.	Patnai 298.	Indra-sail.	Patnai 23.
	1	2	3	4	5	6	7
Mean yield in ounces	639·25	630·33	630·25	624·75	615·25	612·66	610·75
Per cent.	105·95	104·48	104·46	103·55	101·98	101·55	101·23
Pounds per acre	2,636·90	2,600·11	2,599·78	2,577·09	2,537·90	2,527·22	2,519·34

Grain.	Dudsar.	Kalam-kati 147.	Nagra 41/14.	Nagra 68/6.	Nagra (local).	General mean.	Standard error.
	8	9	10	11	12	13	14
Mean yield in ounces	606·75	603·58	597·91	593·50	474·66	603·30	12·84
Per cent.	100·57	100·04	99·10	98·37	78·67	100·00	2·12
Pounds per acre	2,502·84	2,489·76	2,466·38	2,448·18	1,957·97	2,488·61	52·96

Chinsurah Farm—Rice Research Section.

Gosaba Farm.

Preliminary Late Aman Paddy Test.

12 varieties 8 times replicated (randomised blocks).

Area of sub-plot—11″ × 11″.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	Mahalanobis' X.
Block	7	9,055·96	1,293·70	....
Treatment	11	43,874·70	3,988·60	6·07
Error	77	50,540·82	656·37	....
Total ..	95	103,471·48	....	....

Summary of results.

Grain.	Tilak-kachary. 1	Angis-war white. 2	Malabati 1561/37. 3	Kumar-gair (local). 4	Kumar-gair 1567. 5	Taung deikpan T 30. 6	Harimoi 1393. 7
Mean yield in ounces	130·16	118·62	114·77	109·16	107·86	99·16	97·88
Per cent.	135·54	123·52	119·51	113·56	112·31	103·26	101·92

Grain.	Bomma-dewa. 8	A 29/16. 9	E 30-42. 10	Kalagyi D—15. 11	Co—3. 12	General mean. 13	Standard error. 14
Mean yield in ounces	91·46	85·06	80·18	60·18	57·88	96·03	9·05
Per cent.	95·24	88·57	83·49	62·66	60·27	100·00	9·42

Gosaba Farm.

Field Scale Patnai Paddy Test.

5 varieties 8 times replicated (randomised blocks).

Area of sub-plot—1/80th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	Mahalanobis X.
Block	7	89,231·88	12,747·41	....
Treatment	4	39,459·40	9,864·85	8·[illegible]
Error	28	33,021·98	1,179·35	....
Total ..	39	161,713·26	....	....

Summary of results.

Grain.	Patnai 298.	Patnai (local).	Patnai 433.	Patnai 23.	Patnai 638/35.	General mean.	Standard error.
	1	2	3	4	5	6	7
Mean yield in ounces	562·18	529·38	506·07	496·33	469·18	512·63	12·14
Per cent.	109·66	103·26	98·72	96·82	91·52	100·0	2·36
Pounds per acre	2,810·90	2,646·90	2,530·35	2,481·65	2,345·90	2,563·15	60·70

Appendix I-E.

Selection Series Experiment, Suri Farm.

(1) Situation I: Groups A and B.

Situation I: Group A: Yield of grain in ounces.

Treatments.	Kelesh E. K. T.	Ulusuku 57.	Newali 59.	Bhutmuri 9.	Ashkata.
Actual mean yield (oz.) ..	9·46	9·23	9·08	8·86	8·58
Percentage yield	117·59	114·73	112·86	110·13	106·65

Treatments.	Ausdhan.	C. P. 17(7).	Bhutm uri 36.	General mean.	Standard error.
Actual mean yield (oz.) ..	6·67	6·36	6·12	8·045	0·287 oz.
Percentage yield	82·91	79·05	76·07	100·00	3·57 Per cent.

Situation I: Group B: Yield of grain in ounces.

Treatments.	238/1252	Bhasa 31.	Nouchi.	Badkalamkati 52.	Hetamuth.
Actual mean yield (oz.) ..	15·59	15·12	14·45	14·05	13·96
Percentage yield	116·08	112·58	107·59	104·62	103·95

Treatments.	Jhanji 34.	Charnock Sp. 4C.	Bhutmuri 36.	General mean.	Standard error.
Actual mean yield (oz.) ..	12·35	12·12	9·77	13·43	0·56
Percentage yield	91·96	90·25	72·75	100·00	4·17

Note.—The mean yields are of 48 plants harvested on area basis.

Situation II : Group A : Yield of grain in ounces.

Treatments.	Badkalamkati E. H. 8.	Badkalamkati 100.	Badkalamkati 65.	Bhramarkanu.	Dahia.
Actual mean yield (oz.) ..	21 ·88	21 ·54	21 ·00	19 ·98	19·8[illegible]
Percentage yield	110 ·62	108 ·90	106 ·17	101 ·01	100·1[illegible]

Treatments.	Badrash I. K. T.	E. A. T.(2) 96.	Khiramungi 69.	Mean yield.	Standard error.
Actual mean yield (oz.) ..	18 ·94	17 ·82	17 ·27	19 ·78	0·39
Percentage yield	95 ·75	90 ·09	87 ·31	100 ·00	1·98

Situation II : Group B : Yield of grain in ounces.

Treatments.	Badkalamkati 65.	Badkalamkati E. H. 11.	Badkalamkati Vishnupur.	Jhulur Behar.	Surmatia 179 N. C.
Actual mean yield (oz.) ..	18 ·59	18 ·40	18 ·12	16 ·94	16·91
Percentage yield	108 ·90	107 ·79	106 ·15	99 ·24	99·0[illegible]

Treatments.	Mohansail 38 N. C.	T. 22A U. P.	Bhatagurmatia 37.	Mean yield.	Standard error.
Actual mean yield (oz.) ..	16 ·62	15 ·83	15 ·14	17 ·07	0·47
Percentage yield	97 ·36	92 ·73	88 ·69	100 ·00	2·75

Note.—The actual mean yields are of 48 plants harvested on area basis.

Situation III : Group A : Yield of grain in ounces.

Treatments.	Panlui 272.	Bolder.	Kalamkati 184.	Sonajhul N. C. 34.	Katakkalma.
Actual mean yield (oz.) ..	15 ·27	15 ·02	14 ·65	14 ·19	13·88
Percentage yield	108 ·37	106 ·60	103 ·97	100 ·71	98·51

Treatments.	Kalamkati E. H. 38.	Sitasail 340.	Motorkalma 180.	General mean.	Standard error.
Actual mean yield (oz.) ..	13 ·62	13 ·54	12 ·58	14 ·09	0·45
Percentage yield	96 ·66	96 ·10	89 ·28	100 ·00	3·184

Situation III: Group B: Yield of grain in ounces.

Treatments.	Jhingasail.	Tulsibokul.	Jatakalma 375.	Paramannasail N. C. 34.	Boldana 292.
Actual mean yield (oz.) ..	10·30	9·91	9·84	9·84	9·25
Percentage yield	112·31	108·06	17·29	107·29	100·86

Treatments.	Boaldara 390.	Ajan 246.	Dudhenona 396.	General mean.	Standard error.
Actual mean yield (oz.) ..	9·23	8·20	6·80	9·17	0·39
Percentage yield	100·64	89·41	74·15	100·00	4·22

Note.—The actual mean yields are of 48 plants harvested on area basis.

Situation IV: Group A: Yield of grain in ounces.

Treatments.	Bhasamanik.	Muktahar 351.	Nagra 63/6.	Boldana 452.	Daharnagra 510.
Actual mean yield (oz.) ..	21·91	20·41	20·25	19·87	19·52
Percentage yield	115·32	107·42	106·58	104·58	102·74

Treatments.	Hannyakhuri 370.	Sindurmukhi 34 N. C.	Champasail 33 N. C.	General mean.	Standard error.
Actual mean yield (oz.) ..	18·09	17·88	13·97	19·00	1·10
Percentage yield	95·21	94·11	73·53	100·00	5·78

Situation IV: Group B: Yield of grain in ounces.

Treatments.	Bomadewa (Burma).	Poldar 390.	Bhasamanik.	Kaya 367.	Dhusuri 323.
Actual mean yield (oz.) ..	21·00	20·91	20·62	20·38	19·94
Percentage yield	108·05	107·59	106·10	104·86	102·60

Treatments.	Ajan 551.	Co. 1 Madras.	Dorangi N. C. 42.	General mean.	Standard error.
Actual mean yield (oz.) ..	19·48	18·80	14·35	19·435	0·637
Percentage yield	100·23	96·73	73·84	100·00	3·277

Note.—The actual mean yields are of 48 plants harvested on area basis.

SEMI-FINAL YIELD TRIALS.

Situation I : Yield of grain in ounces.

Treatments.	Ashkata.	Bhutmuri 36.	Pankey.	Charnock.	General mean.	Standard error.
Actual mean yield (oz.)	206 ·5	170 ·5	168 ·00	125 ·5	167 ·6	12·[illegible]
Percentage yield ..	123 ·21	101 ·73	100 ·23	74 ·85	100 ·00	7·[illegible]

Yield of straw in ounces.

Treatments.	Ashkata.	Bhutmuri 36.	Pankey.	Charnock.	General mean.	Standard error.
Actual mean yield (oz.)	191 ·0	172 ·0	159 ·0	155 ·5	169 ·4	5 ·35
Percentage yield ..	112 ·75	101 ·53	93 ·86	91 ·79	100 ·00	3 ·157

SEMI-FINAL YIELD TRIAL (EARLY AMAN TYPE).

Treatments.	K × I (36).	4/145-C.	Badkalam-kati 65.	Jaldi Aman.	General mean.	Standard error.
Actual mean yield (oz.)	283 ·5	276 ·0	266 ·0	239 ·5	266 ·25	4 ·96
Percentage yield ..	106 ·48	103 ·66	99 ·91	89 ·95	100 ·00	1 ·86

Yield of straw in ounces.

Treatments.	K × I (36).	Jaldi Aman.	Badkalam-kati 65.	4/145-C.	General mean.	Standard error.
Actual mean yield (oz.)	245 ·5	243 ·0	242 ·0	226 ·5	239 ·25	4 ·37
Percentage yield ..	102 ·61	101 ·57	101 ·15	94 ·67	100 ·00	1 ·82

SEMI-FINAL YIELD TRIAL (INTER AMAN TYPE).

Situation III : Yield of grain in ounces.

Treatments.	Nona-ramsail.	Boldar.	Harkum.	Maltu.	General mean.	Standard error.
Actual mean yield (oz.)	281·0	264·0	236·5	226·0	251·875	9·55
Percentage yield ..	111·56	104·81	93·90	89·73	100·00	3·79

Yield of straw in ounces.

Treatments.	Nona-ramsail.	Boldar.	Harkum.	Maltu.	General mean.	Standard error.
Actual mean yield (oz.)	328·0	263·5	215·5	207·5	253·625	10·63
Percentage yield ..	129·32	103·89	84·97	81·81	100·00	3·32

SEMI-FINAL YIELD TRIAL (LATE AMAN TYPE).

Situation IV : Yield of grain in ounces.

Treatments.	Bhasamanik.	Ajan 551.	Raghusail.	Sindur-mukhi (selected).	General mean.	Standard error.
Actual mean yield (oz.)	282·0	280·0	277·0	270·0	277·25	8·78
Percentage yield ..	101·71	100·99	99·91	97·39	100·00	3·16

Yield of straw in ounces.

Treatments.	Bhasamanik.	Raghusail.	Ajan 551.	Sindur-mukhi (selected).	General mean.	Standard error.
Actual mean yield (oz.)	291·0	273·0	266·0	258·5	272·125	7·44
Percentage yield ..	106·94	100·32	97·75	94·99	100·00	2·73

Semi-Final Yield Trials at Suri Farm.

Situation I: Yield of grain in ounces.

Treatments.	4/145 C.	Badkalam-kati 7.	Kalakuchi E. A. T.	Sada Aus E. K. T.	General mean.	Standard error.
Actual mean yield (oz.)	202·90	200·00	181·60	156·20	185·19	7·8[illegible]
Percentage yield ..	109·56	108·00	98·06	84·35	100·00	4·2[illegible]

Yield of straw in ounces.

Treatments.	Badkalam-kati 7.	4/145 C.	Kalakuchi E. A. T.	Sada Aus E. K. T.	General mean.	Standard error.
Actual mean yield (oz.)	237·50	224·25	213·50	202·50	219·44	7·9[illegible]
Percentage yield ..	108·23	102·19	97·29	92·28	100·00	3·6[illegible]

Note.—The actual mean yields are of 688 plants harvested on area basis.

Situation II: Yield of grain in ounces.

Treatments.	Harakum.	Badkalam-kati 65.	4/145 C.	K × I 36	General mean.	Standard error.
Actual mean yield (oz.)	305·1	296·1	274·9	264·9	285·2	8·4[illegible]
Percentage yield ..	106·97	103·82	96·38	92·84	100·00	2·9[illegible]

Yield of straw in ounces.

Treatments.	Harakum.	K × I 36.	Badkalam-kati 65.	4/145 C.	General mean.	Standard error.
Actual mean yield (oz.)	360·75	318·75	309·50	297·00	321·5	12·03
Percentage yield ..	112·21	99·14	96·27	92·38	100·00	3·74

Situation II: Group B: Yield of grain in ounces.

Treatments.	Boldar.	Sundarsail.	Kalamkati 315.	Kaladubraj.	General mean.	Standard error.
Actual mean yield (oz.)	246·00	236·25	235·75	201·25	229·81	17·30
Percentage yield ..	107·05	102·80	102·58	87·57	100·00	7·53

Yield of straw in ounces.

Treatments.	Kalamkati 315.	Boldar.	Kaladubraj.	Sundar-sail.	General mean.	Standard error.
Actual mean yield (oz.)	347·5	343·5	341·5	319·5	338·0	20·3
Percentage yield ..	102·81	101·63	101·04	94·53	100·00	6·03

Note.—The actual mean yields are of 688 plants harvested on area basis.

Situation IV : Yield of grain and straw. Yield of grain in ounces.

Treatments	Bhasamanik.	Nona-ramsail.	Hiramung 145.	Sitasail 282.	Sindurmukhi 287.	Kuthe 287.	Dhabala 497.	Sindurmukhi 199.	General mean.	Standard error.
ctual mean yield (oz.) ..	126 ·0	122 ·4	112 ·8	108 ·7	108 ·3	107 ·5	101 ·0	97 ·1	110 ·47	5 ·593
ercentage yield	114 ·05	110 ·79	102 ·11	98 ·39	98 ·03	97 ·31	91 ·42	87 ·89	100 ·00	5 ·06

Yield of straw in ounces.

Treatments.	Nona-ramsail.	Dhabala 497.	Kuthe 282.	Sitasail 282.	Sindurmukhi 199.	Hiramung 145.	Sindurmukhi S. A. T.	Bhasamanik	General mean.	Standard error.
ual mean yield (oz.) ..	187 ·8	186 ·5	183 ·9	180 ·1	175 ·2	173 ·1	171 ·0	167 ·9	178 ·19	8 ·50
entage yield	105 ·39	104 ·66	103 ·20	102 ·07	98 ·32	97 ·14	95 ·96	94 ·23	100 ·00	4 ·82

Note.—The actual mean yields are of 304 plants harvested on area basis. There is no strain to beat Bhasamanik the standard variety in yield of grain. The new introduction ramsail is equal to it. It has been previously proved that in situations II and III it is unbeaten. Bhasamanik and Nonaramsail show significant superiority over the last and two strains respectively in the yield of grain.

(1) Preliminary First Situation Yield Trial (New Series).

Yield of grain in ounces.

Treatments.	Khira-mungi.	Nouchi.	K. × Amrash.	Newali.	Ashkata.	Ulusuku.	Bhutmari (local).	Bhutmari 36.	Mondir-kola.	C. P. (17) 7.	General mean.	Standard error.
Actual mean yield (oz.) ..	60 ·94	59 ·12	55 ·56	54 ·37	50 ·94	48 ·94	47 ·81	41 ·44	41 ·25	39 ·81	56 ·02	2 ·23
Percentage yield	121 ·83	118 ·39	111 ·07	108 ·71	101 ·84	97 ·84	95 ·38	82 ·84	82 ·47	79 ·59	100 ·00	4 ·46

(2) Preliminary Second Situation, Yield Trial (New Series).

Yield of grain in ounces.

Treatments.	Badkalam-kati 137.	Badkala-mkati 11.	Badkalam-kati selected.	Jhulur Behar.	Bhramar-kanu.	Badkalam-kati 128.	Badkalam-kati 52.	Hetamuth.	Debia.	Aswindhuli.	Badkalam-kati 7.
ual mean yield (oz.)	60 ·44	59 ·62	57 ·94	57 ·69	56 ·94	56 ·31	55 ·50	54 ·87	54 ·44	53 ·69	53 ·25
centage yield ..	114 ·90	113 ·34	110 ·15	109 ·67	108 ·24	107 ·05	105 ·51	104 ·31	103 ·49	102 ·07	101 ·27

Treatments.	Sada Aus.	Badkalam-kati m/E. H. 5.	238/1252.	Surmatia.	Mota-badrash.	K. × Co.	Jhulankandi.	Bhasa.	Lachmon-bhog.	General mean.	Standard error.
tual mean yield (oz.)	52 ·94	52 ·31	51 ·62	51 ·12	50 ·56	44 ·94	43 ·56	42 ·94	41 ·37	52 ·603	3 ·12
[illegible]	100 ·94	99 ·44	98 ·13	97 ·18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

(3) PRELIMINARY THIRD SITUATION, YIELD TRIAL (NEW SERIES).

Yield of straw in ounces.

Treatments.	Kalikalma.	Boldana 292.	Lal Labui 336.	Narikalma 320.	Badkalam-kati 141.	Rabansail 296.	Dhijira.	Badkalam-kati 67.	Kalamkati 199.	Jhingasail 301.	Kaladubraj.
Actual mean yield (oz.)	68 ·00	65 ·31	63 ·00	61 ·62	60 ·69	60 ·62	60 ·19	59 ·81	58 ·87	58 ·75	58 ·25
Percentage yield ..	117 ·97	113 ·31	109 ·30	106 ·90	105 ·29	105 ·17	104 ·42	103 ·76	102 ·13	101 ·93	101 ·06

Treatments.	Markul 200.	Ajan 246.	Jhingasail standard.	Hannyasail.	Boran (local).	Chhato Velki.	Kuthenona.	Jatavonan 167.	Kelesh 306.	General mean.	Standard error.
Actual mean yield (oz.)	58 ·00	57 ·81	57 ·69	56 ·06	55 ·56	54 ·06	48 ·56	45 ·81	44 ·12	57 ·64	1 ·75
Percentage yield ..	100 ·62	100 ·29	100 ·09	97 ·26	96 ·39	93 ·79	84 ·25	79 ·48	76 ·54	100 ·00	3 ·05

(4) PRELIMINARY FOURTH SITUATION, YIELD TRIAL (NEW SERIES).

Yield of grain in ounces.

Treatments.	Paramanna-sail N. C. 19.	Champa-sail (Suri).	Jhinga-sail 214.	Boldar 378.	Sindur-mukhi Sat.	Hiramul 538.	Sitasail.	Dudhe-nona (local).	Banik-kalma standard.	Mota Sylhet N. C. 39.	Tulshi-Bokul 487.	Gobinda N. C. 9.	General mean.	S. E.
Actual mean yield (oz.)	45 ·42	44 ·58	44 ·46	44 ·29	43 ·63	42 ·54	40 ·21	39 ·58	39 ·37	38 ·38	37 ·38	32 ·54	41 ·03	1 ·29
Percentage yield ..	110 ·70	108 ·65	108 ·36	107 ·95	106 ·34	103 ·68	98 ·00	96 ·47	95 ·95	93 ·54	90 ·98	79 ·81	100 ·00	3 ·14

MANURIAL EXPERIMENT, 1940-41.

Variance due to—	Degree of freedom.	Yield of grain.		Yield of straw.		Money value of gra plus straw yiel	
		Sums of squares.	Mean square.	Sums of squares.	Mean square.	Sums of squares.	Mean squar
Blocks	11	41 ·2109	3 ·74	40 ·56	3 ·68	17 ·48	1·59
Variety	1	5 ·9800	5 ·98	4 ·50	4 ·50	1 ·78	1·78
Phosphoric acid ..	2	5 ·6615	2 ·83	1 ·55	·77	2 ·77	1·38
Nitrogen (a) Linear regression.	1	425 ·0050	429 ·00**	782 ·05	782 ·06**	220 ·44	220·44
(b) Quadratic regression	1	6 ·2500	6 ·25*	15 ·18	15 ·18**	2 ·78	2·78
Total ..	2	435 ·2550	217 ·62**	797 ·24	398 ·62**	223 ·22	111·61
Variety × Nitrogen ..	2	·6997	·35	8 ·03	4 ·02	·45	·22
Variety × Phosphoric acid.	2	16 ·7517	8 ·37**	7 ·56	3 ·78	7 ·69	3·84
Nitrogen × Phosphoric acid (I Component confounded).	2	2 ·4365	1 ·22	3 ·24	1 ·62	1 ·54	·82
Nitrogen × Phosphoric acid (J component confounded).	2	·2126	·11	·94	·47	·20	·10
Nitrogen × Phosphoric acid (I J components).	4	2 ·6491	·66	4 ·18	1 ·04	1 ·84	·46
Nitrogen × Phosphoric acid × variety (I component confounded).	2	·1621	·81	·898	4 ·49	1 ·74	·87
Nitrogen × Phosphoric acid × variety (J component confounded).	2	·3787	·19	4 ·66	2 ·33	2 ·48	1·24
Nitrogen × Phosphoric acid × variety (I J components).	4	·5408	·13	13 ·65	3 ·41	4 ·22	1·05
Error	43	60 ·6808	1 ·41	63 ·36	1 ·47	25 ·98	·60
Total ..	71	569 ·4297	8 ·02	940 ·65	13 ·24	285 ·45	4·02

**Denotes a significance beyond 1 per cent. level.

*Denotes a significance beyond 5 per cent. level.

SCENTED PADDY YIELD TRIAL.

Yield of grain in ounces.

Treatments.	Gandhamalati 6·2.	Badshabhog 377.	Randhuni pagal. 536.	Piprasail 468.	Paramannasail 544.	Banasmati 558.
Actual mean yield (oz.)	44 ·2	42 ·8	41 ·1	39 ·5	37 ·9	36 ·9
Percentage yield ..	117 ·65	113 ·92	109 ·40	105 ·13	100 ·88	98 ·22

Treatments.	Samudrabali 338.	Bhogjira 465.	Kalajira 476	Gobindabhog 571.	General mean.	Standard error.
Actual mean yield (oz.)	36 ·3	34 ·8	34 ·7	27 ·5	17 ·57	1 ·76
Percentage yield ..	96 ·62	92 ·63	92 ·36	73 ·19	100 ·00	4 ·684

Complex Cultural Experiment.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	Value of "X".
Blocks	11	191·0625	17·2693	3·6357
Variety	1	2·9236	2·9236	..
Hoeing	2	15·7604	7·8802	1·6496
Weeding	2	27·3854	13·6927	2·8666
Variety × hoeing	2	12·9202	6·4601	1·3523
Hoeing × weeding (I)	2	20·9747	10·4873	2 1953
Hoeing × weeding (J)	2	1·6702	0·8351	..
Hoeing × weeding (I + J)	4	22·6449	5·6612	1·1850
Variety × weeding	2	1·1702	0·5851	..
Hoeing × weeding × variety (I)	2	23·2173	11·6806	2·4300
Hoeing × weeding × variety (J)	2	9·0007	4·50003	..
Hoeing × weeding × variety (I + J)	4	31·2180	8·0545	1·6860
Residual	43	205·4148	4·7771	..
Total ..	71	511·5000	..	..

Wheat Test (1940-41).

Rajshahi Farm.

7 varieties of 6 times replicated—area of sub-plot—1/132nd acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	S. D.	S. E.	Value of X.
Block	5	36·45	7·29	..	..	..
Treatment ..	6	34·89	5·82	..	..	4·55**
Error	30	38·49	1·29	1·13	0·46	..
Total ..	41	109·83	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	P. 5.	P. 190.	P. 80-5.	P. 6.	P. III.
	1	2	3	4	5
Maunds per acre	32·48	31·08	29·63	28·51	27·8
Per cent.	111·59	110·17	105·34	101·63	98·5

Grain.	Jamali (24).	Gangajali (50).	General mean.	Error.	Critical difference.
	6	7	8	9	10
Maunds per acre	27·06	21·84	28·21	1·52	4·3
Per cent.	95·92	77·42	100	5·39	15·5

Conclusion :— 1, 2, 3, 4, 5, 6, 7.

Wheat Test (1940-41).

Pabna Farm.

9 varieties 6 times replicated—area of sub-plot—1/186th acre.

Analysis of varianace.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	S. D.	S. E.	Value of X.
Block	5	56·64	11·33	..	..	..
Treatment ..	8	8·44	1·05	..	..	4·77**
Error	40	8·6	0·22	0·47	0·19	..
Total ..	53	73·72	..	..	..	..

**Significant at 1 per cent. leavel.

Summary of results.

Grain.	P. 52.	C. 591.	Jamali (24)'.	P. 6.	P. 190.	C. 518.
	1	2	3	4	5	6
Maunds per acre	14·60	13·53	13·29	10·15	12·97	12·55
Per cent.	119·48	110·72	108·77	107·61	106·14	102·70

Grain.	P. 80-5.	P. 111.	Gangajali. (50).	General mean.	Error.	Critical difference.
	7	8	9	10	11	12
Maunds per acre	11·39	10·60	8·13	12·22	0·88	2·58
Per cent.	93·20	86·74	67·35	100	7·20	20·70

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9.

Test of Kalai (1940-41).

Krishnagar Farm.

12 varieties 6 times replicated—area of sub-plot—1/363th acre.

Analysis of variance.

Variance due to—	Degree of freedom.	Sums of squares.	Mean square.	S. D.	S. E.	Value of X.
Block	5	156·95	..	..	..	..
Treatment ..	11	1,992·11	181·10	..	..	5·37**
Error	35	1,855·72	32·74	5·80	2·38	..
Total ..	71	4,004·78	..	..	..	..

**Significant at 1 per cent. level.

Summary of results.

Grain.	31/N. C.	72/XIV.	65/8	64/X	32/N. C.	7/XIII.	8/V.
	1	2	3	4	5	6	7
Maunds per acre. ..	4·54	4·52	4·20	4·14	3·90	3·86	3·69
Per cent.	123·37	122·83	114·13	112·50	106·00	104·00	100·27

Grain.	95/S.	23/N. C.	37/V.	41/XVII.	149/S.	General mean.	Error.	Critical difference.
	8	9	10	11	12	13	14	15
Maunds per acre ..	3·61	3·02	3·01	2·99	2·72	3·68	0·27	0·76
Per cent.	98·10	82·06	81·79	81·25	73·91	100·00	7·34	20·65

Conclusion :— 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 12.

Annual Report of the Fibre Expert to the Government of Bengal for the year 1940-41.

Charge.—Rai Sahib N. C. Basu, M.Sc., held charge of this section till the 19th July 1940 and again from the 20th August to the 30th November 1940. He was on a month's leave from the 20th July to the 19th August and again proceeded on leave from the 1st December 1940 preparatory to retirement. I held charge of the section during his absence in addition to my own duties. Babu Jnanendra Mohan Sen continued as Field Assistant throughout the year excepting for a period of about 6½ weeks at the latter part of the year when he was on medical leave. His absence during the close of the financial year was rather prejudicial as the strain was too heavy for me alone to cope with.

The post of the Bacteriological Assistant was held by Maulvi Amir Hussain, M.Sc. He was deputed to the Tropical School of Medicine to undergo a course of training on Bacteriology. He rejoined his duties on the 9th December 1940 on completion of his course, which latterly with the sanction of Government was extended to a period of nine months.

Tour.—Rai Sahib N. C. Basu was on tour for 63 days and I for 56 days. The Assistants were out for 100 days, Overseers for 323 days and the Fieldmen for 445 days.

Research work.—The section now deals with all other fibre-yielding crops excepting jute, studies on which are now carried on by the Director of the Jute Research Laboratory of the Indian Central Jute Committee. Investigations on sunnhemp (Crotalaria juncea), Mesta (Hibiscus cannabinus), Roselle (Hibiscus sabdariffa), Musk Mallow (Hibiscus abelmoschus), Hibiscus sabdariffa var Altissima, Rhea (Boehmeria nivea), Sida (Sida rhombifolia), Sisal Hemp (Agava sisalana var rigida), Malachra Capitata and Flax (Linum usitatissimum), etc., are being conducted by this section.

Season.—It was favourable at the beginning but subsequent droughty condition or scanty and insufficient rainfall checked the growth of the jute crop in North and East Bengal. On the other hand in Western Bengal Olitorius flourished with alternate sunshine and rainfall. There was a dearth of steeping water almost everywhere which hampered harvesting operations, and the quality of the fibre was therefore generally rather poor.

Area of jute crop.—At the outset it was proposed to impose compulsory restriction of area under jute but this embargo was subsequently lifted by Government and the acreage mounted to 3,670,650 acres as against 2,549,600 acres in 1939. The total outturn was estimated at 10,975,750 bales as compared with 8,321,200 bales in the previous year. These constitute an increase of 44 per cent. and 31·9 per cent. over the previous acreage and yield, respectively.

Prices.—The prices opened with Rs. 10 to Rs. 12 per maund and in May 1940 the Government promulgated an ordinance fixing Rs. 90 as maximum and Rs. 60 as minimum price for markets for L.J.A. (London Jute Association's) first marks of jute. The disturbed condition in Europe has however overshadowed the jute market.

Kharif experiments with various fibre crops.—During the kharif small experiments were conducted with different fibre crops as enumerated previously. Hibiscus Sabdariffa var Altissima was tried on the following farms with results shown against each:—

	Yield of fibre per acre.	Yield of seed per acre.
	Md. sr. ch.	Md. sr. ch.
Dacca Farm	30 24 3	6 17 0
Dinajpur Farm	17 20 0	....
Malda Farm	16 20 0	....
Bankura Farm	13 35 0	....

It is reported that there is ample scope of its extension in Bankura and Malda districts.

This may replace Mesta in the *bil* tracts of the Madaripur subdivision if fresh seed could get there in time for sowing by November.

Sugar bags are made of this fibre in Java where it is grown on account of its heavy yield and it has thus replaced jute bags in that island to a fair extent.

An experiment was undertaken by this section to study the moisture absorbing propensity and storing quality of Altissima and jute bags by storing sugar in them. Two of each kind were tried and sugar was stored on 6th February 1940. These bags were kept in a ratproof cage made of wire-netting specially made for the purpose. These were kept side by side and not heaped.

Description of the bags is given below:—

Bag Nos. 1 and 2—Jute bags, Fabric of Twill, Porter 8 shot 9.

Bag Nos. 3 and 4—Altissima bags (Roselle), Dry beamed.

Width or size—44″ × 26½″ head.

Weight 2⅝lbs.

Finish ordinary twill strip 3 Blue sewing once overhead. Seven with jute and one union sewn with flax.

Record was taken from the 18th June 1940 when oozing became apparent on the outer side. The bags were weighed every fortnight and samples of sugar taken from them with a probe for moisture estimation.

From the final observation made on the 27th November 1940, it was seen that the total loss of sugar in jute bags Nos. 1 and 2 was 47 lbs. 4 oz. and 31 lbs. 4 oz. constituting a loss of 20·9 per cent. and 13·7 per cent. respectively, while in that of Roselle bags Nos. 3 and 4 it was 13 lbs. 8 oz. and 14 lbs. 12 oz. constituting a loss of 6 per cent. and 6·5 per cent., respectively. In the latter the loss was fairly small and within the limits of error.

The moisture content in sugar in jute bags was always higher than in the case of Roselle bags. It varied from 3 per cent. to 3·2 per cent. in jute bags as against 4 per cent. to 1·7 per cent. in Roselle bags. Hence Roselle bags appeared to be decidedly better in keeping quality than jute bags as far as sugar was concerned.

The following gives the average yield per acre of some of the other fibre crops tried by this section:—

	Height in.	Time taken in retting in days.	Average yield per acre.	Remarks.
	Ft. in.		Md. sr. ch.	
Roselle ..	4 8	20	6 37 5	The calyx is of commercial value as the same is used for jelly-making but necessitates early harvest.
Musk Mallow ..	3 8	15 to 18	7 19 0	The seed is used in confectionery for imparting the flavour and aroma of musk.
Malachra Capitata	5 3½	10 to 12	6 27 13	Is used as a substitute of jute in some parts of the Bombay Presidency.
Sida ..	6 0	15	8 0 0	Silky fibre but not a commercial proposition owing to poor outturn.

Jute seed.—Two hundred and forty-five samples of D. 154 and 1937 samples of Chinsurah Green Olitorius were received from Mr. A. L. Godden, Agent for the Sale of Government Jute Seed, for germination test during the year under report. A sum of Rs. 1,147-13-6 was received as testing fees from the Agent.

In all 460 maunds of D. 154 and 395 maunds 8 seers 10 chattaks of Chinsurah Green Olitorius seed were sold during the year.

Seeds of these two varieties were raised on the Dacca, Bogra, Mymensingh, Dinajpur, Chinsurah and Berhampore Government Farms for meeting the requirements of the Union Board Farms during the ensuing kharif.

	D.154.			C. G. O.		
	Area in acre.	Actual outturn of seed.	Outturn per acre.	Area in acre.	Actual outturn of seed.	Outturn per acre.
		Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Md. sr. ch.
Dacca ..	·296	1 10 0	4 8 1	·293	1 14 0	4 24 1
Bogra ..	·2	0 30 0	3 30 0	..	..	..
Mymensingh ..	·2	0 38 0	4 30 0	..	..	..
Dinajpur ..	·2	1 5 0	5 25 0	..	..	..
Berhampore ..	..	..	..	·2	0 28 0	3 20 0
Chinsurah ..	..	..	..	·2	1 11 0	6 15 0

Flax.—During the year under report 64 tons of pedigree white blossom Frieseland flax seed was obtained from Holland for sowing on private lands in Bengal and Bihar on a 50:50 basis, under the

auspices of the Government of India, Supply Department. The seed reached here in time for sowing but in the protracted voyage *viâ* the Cape of Good Hope, developed some fungus which caused it to lose germination very fast. The seed was therefore treated with various chemicals and fungicides, etc., as detailed below. About 200 samples were treated—

(1) Seed treated with Agrosan G was put in Petri dish with sand and final counting done on the 8th day. The average germination was 18·7 per cent.

(2) Seed after sunning was treated with Agrosan G and put in Petri dish for germination in (*a*) room temperature 33°C. and (*b*) in incubator, temperature 34·5°C. The average germination for (*a*) was 17·5 per cent. and for (*b*) was 12·21 per cent.

(3) Seed after sunning and treatment with Agrosan G was put in Tobacco heater at 55°C. to 56°C. for 10, 20 and 30 minutes together with untreated seed as control.

	Average germination. Treated seed.	Percentage of untreated seed.
	Per cent.	Per cent.
Kept for 10 minutes	16·6	16·3
20 "	16	11·3
30 "	13·8	12·8

(4) Seed treated with 1 per cent. and ·5 per cent. sulphuric acid gave only 3·77 per cent. and 3 per cent. germination, respectively.

(5) Seed treated with (1) flower of sulphur, (2) 1 per cent. copper sulphate for 1 hour and (3) ½ per cent. potassium permanganate for ½ an hour (moist treatment of seed was impracticable owing to the fact that this turns into a mucilagrinous mass). Average germination for (1) was 10·2 per cent., for (2) per cent. and for (3) 11·8 per cent.

(6) Untreated seed was energised by passing an electric current through it for half an hour. The average germination was 20 per cent.

(7) Untreated seed was kept in a stoppered bottle with Carbon Dioxide for an hour and then tested for germination. The average germination was 17·4 per cent.

(8) Seed treated with Agrosan G was stored after sunning in air-tight receptacle for nearly a month. In this test the height of the bin was divided into 5 equal parts each approximately representing 30 seers of seed. A seed sampler was used for taking samples from the different heights: 1st division (topmost) 12·3 per cent., 2nd division 12·7 per cent., 3rd division 12·68 per cent., 4th division 11·17 per cent. and 5th division (bottom) 11·28 per cent.

Even the seed that had had 18 per cent. to 20 per cent. germination at the beginning had only 2 per cent. germination at the time of sowing, although the whole quantity of the seed was treated with Agrosan G and kept in storage for about 2 months in air-tight bins. All germination tests carried out, needless to mention, were under artificial conditions in the Laboratory.

On account of this poor germination it was decided not to grow this on private land but restrict the same only to Government farms. A very heavy seed rate was used and the crop was intended only for seed multiplication. Nicifos II was applied in heavy doses to induce healthy growth and development. The crop unexpectedly responded very well in all the places and germinated evenly. Agrosan therefore appears to have some beneficial effect in maintaining the viability of the seed under field conditions.

The following acreage was put under this on various farms:—

	Acres.	
Dacca	10·5	
Chinsurah	20	
Krishnagar	7	(inclusive of resown area).
Kalimpong	11·5	(ditto).
Rajshahi	5	
Rangpur	·5	
Berhampore	3·55	
Narayanganj	1·50	
	59·55	

Fasciation was observed in Dacca, Chinsurah, Krishnagar and Rajshahi Farms. At Dacca the number of fasciated plants constituted about ·5 per cent. of the total population and at Chinsurah 2·7 per cent. This seems to indicate superabundance of nutriment and caused flattening of the stems. Seed bearing was very much retarded in such plants.

At Kalimpong no fasciation was observed but the sowing was done somewhat late and although the growth was quite satisfactory the seeding was poor even on this farm due to insect depredation at the maturing stage.

At almost all the farms the crop from the early sown area was uniform and of good height. This variety however appears to be a shy seeder and much more straw than seed can be expected out of the crop everywhere. The stems were tall, in some cases reaching over 6 feet in height, somewhat thick which would yield coarser fibre.

Arrangements are being made for extracting of fibre from the straw at Chourigacha (Murshidabad), Chinsurah (for West Bengal), Dacca and Kalimpong (for East and North Bengal).

The Provincial Demonstration scheme on flax was carried out during the year under report in 3 centres representing three typical divisions on about 100 acres of land (1) for Northern Bengal at Gaibandha on 33 acres, (2) for Western Bengal at Chourigacha on 33 acres and (3) for Eastern Bengal at Narayanganj on 33 acres. Two centres, one in Western Bengal and another in Eastern Bengal, were added during the year under report.

These experiments were conducted with acclimatised seed as in previous years.

At Gaibandha the areas taken up in the previous year were found rather unsuitable and better areas were selected at Shyampur, Beltali, Kalpani, Harinathpur and Kazirbazar. All these are within 15 miles of Gaibandha town. Manuring was done with Nicifos in addition to cowdung. The crop in about 60 bighas (20 acres) of land grew satisfactorily. Major portion of this area was irrigated by Don. One small plot without irrigation reached a height of over 5 feet here.

At Chourigacha also it was grown with irrigation. A pumping set run by oil engine was utilised for the purpose and Don was used for irrigation from sumps. The soil is rather clayey and the growth was fairly satisfactory. A power breaker and scutcher will be installed here for extraction together with a few hand and pedal-driven machines.

Some growers undertook flax cultivation in Dhulipahar (soil—clayey loam), Dhulian Ganges (dearah land), Nimtitta and Ahiron. There is a spring at Dhulipahar from which irrigation is easily done by Don. The crop at this place was very good. Manuring in all these places were the same as in North Bengal.

At Narayanganj the following areas were taken up:—

Place.	Area. in acres.	Remarks.
Sonakanda	11·6	The crop was satisfactory and irrigation done by a pumping set.
Godenail	6	The crop was subject to severe Agrotis attack and was almost wholly destroyed. The Entomologist tried several remedial measures.
Kaikertek	13·3	
Sanmandi	2	The crop was satisfactory and irrigation done with Don.

At Godenail and Kaikertek the attack by Agrotis, a cut-worm, was very severe. Flood irrigation was resorted to without success. In one night over 14 acres were destroyed the plants being cut clean at the base and no trace of the same left in the field. The insect was noticed to swarm to adjacent plots during midday also and channels were dug and kerosenised water or crude oil emulsion were put in them to prevent their onslaught to new fields. This considerably checked the pest. But it was too late then and almost the whole area had to be resown at Godenail. At Kaikertek resowing was not feasible and therefore abandoned. Light trap was also tried with a fair degree of success as a large number of moths were caught. Poison baits had also some effect in checking the pest.

The population of Agrotis was counted and it was 726,000 per acre against 9,757,440 flax plants. Each insect had 13·4 plants for its share.

Burning to partially sterilise the soil as well as to destroy the larvæ, application of kerosenised ash, Nim cake, Lime, Kerrol, etc., were tried. The plots so treated were not subject to further depredation.

Besides the above the following areas were put under flax in Government farms with our acclimatised seed :—

Name of farm.	Area in acres.	Remarks.
Dacca Farm	·3	The result is given in Appendix
Kalimpong Demonstration Farm ..	·25	In October and subsequent sowings on ·05 acre each month. The October crop has given 9 maunds 24 seers of seed and 64 maunds seers straw. It was an excellent crop. The colour of the straw was also very good.
Dinajpur Farm	·75	Inclusive of lowland. Grown without irrigation. Nicifos II was applied.
Rangpur Demonstration Farm ..	1	
Berhampore Farm ..	1	

The crop at all the farms was good but the results cannot be embodied as they are not ready yet.

This year it has been abundantly proved that irrigation is a very necessary item to ensure a successful crop of flax.

But a salient fact that again seems to be fairly crucial is the deterioration of the flax seed when grown here continuously for a number of years. This is reflected in the poor return of straw although the field appearance of the crop may appear to be satisfactory.

Probably an attempt to keep the "Blood" fresh and pure by exchange of our seed with that of English, Irish, Canadian or Australian pedigree seed almost every third or fourth year would meet the difficulty. A circulation of seed in this way on exchange basis will induce to retain the necessary qualities of the pedigree seed intact in either of the places.

For Bengal, Kalimpong appears to be admirably suited to flax seed raising and for that the third week of October seems to be the best sowing period so far as our experience goes. We are, however, having monthly sowings done in this farm to arrive at a definite conclusion with regard to the best time of sowing for seed multiplication purpose here.

A notable feature of the year in the shape of war effort for this section was the despatch of a ton of flax fibre to London in 7 bales. The appraisement made by connoisseurs in London is given below:—

Bale No. 1.—Good length, broad fibred, canvas flax, light coloured. Strength good, fibre fairly well cleaned but root and top ends not quite free of tow. Rather dry and lacking in quality.

Bale No. 2.—Very similar type but shorter in length, also a canvas flax. In this case both ends of the fibre are clean and preparation had been very thorough.

Bale No. 3.—Good length, ribbony fibre, dark gray colour, well scutched out in the root end, but crop end rather towy. Strength variable. Fibre a little dry but contains rather more spinning quality than Bales 1 and 2.

Bale No. 4.—Mixed length, some rather short, medium gray colour. Soft fibre with some spinning quality but weak and containing a good deal of tow. The yield of hackling will be rather low.

Bale No. 5.—Good length but rather poor fibre lacking weight and spinning quality.

Bale No. 6.—Medium length and strength, well cleaned but also very dry and lacking spinning quality.

Bale No. 7.—Good length, warp flax clean and strong, canvas type, lacking quality.

The ton of flax fetched us £150-14s.-6d. which comes to Rs. 70 per maund net after meeting all incidentals and commission charges of 3 per cent. on the transaction made by the agency which undertook the sale.

We had been expecting some flax power machinery from England from which our breakers and scutchers were proposed to be modelled. Unfortunately none arrived in time for the 1940-41 crop. The deseeders also have not yet come.

At the close of the year it was therefore decided to purchase two power breakers and two pairs of power scutchers locally and instal one set at the Dacca Farm and the other at Chourigacha in Murshidabad district.

Twenty breaking machines and 15 scutching machines were constructed during the year for the two extra centres. Some slight improvements have already been introduced in breaking machines newly constructed.

Rhea.—No further progress has been made with regard to extraction methods. The price of Rhea also has not gone up in proportion to the rise in the price of flax and is therefore not a paying proposition under present conditions.

Sisal hemp.—This has a vast possibility now as Manilla hemp is hardly available in the empire countries. A firm in Madras wants a ton of this fibre every month. A big plantation could run if the firm undertakes a guaranteed regular purchase.

Bacteriological work.—The Bacteriological Assistant on return from Tropical School of Medicine resumed his duties here and has undertaken the following works:—

(1) *Bacteriological examination of retting water for flax.*—The object is to find out what the different organisms are that take active part in the retting of flax. Some such micro-organisms have already been isolated by him from the samples of retting water collected at random. Attempts are now being made to identify them.

(2) Bacteriological grading of milk by—

(*a*) the plate count method,

(*b*) the Breed Smear method, and

(*c*) the Methylene blue reduction test.

Some samples of milk were collected in morning at random from different sources and examined simultaneously by these methods but

the number of bacteria obtained from the same sample of milk by different tests vary very widely.

(3) In addition he delivered a series of 10 lectures on Dairy Bacteriology to Live-Stock Officers on refresher course.

Acknowledgment.—Mr. J. Donald has rendered us immense help in our flax experiments at Narayanganj. I am indebted to Rai Sahib N. C. Basu for his valued advice and help. Babus J. M. Sen, my Field Assistant and H. K. Basak, District Agricultural Officer, Darjeeling, were of great assistance to me, for the carrying out of various flax experiments.

I record with great pleasure the efficient management of my office by Babu N. C. Chakravorty, my Head Clerk, my second clerk Babu C. H. Majumdar also worked very hard during the year.

A. L. MUKHERJI,

Assistant Fibre Expert, Bengal,
in-charge, Fibre Section.

APPENDIX A.

North Mirartek West, Dacca Farm.

Flax Crop, 1940-41.

Each plot—·0165 acre, divided into two equal parts (*a*) and (*b*).

Plot No. and name of variety.	Date of sowing.	Date of harvesting.	Average height.	Outturn of seed per acre.	Outturn of straw per acre.	Remarks.
			Ft. in.	Md. sr. ch.	Md. sr. ch.	
1(*a*) C 16 ..	28-10-1940	17-3-1941	4 2	3 31 4	44 24 12	General dressing of artificial farm-yard manure 100 maunds per acre. Nicifos II in all plots at 300 lbs. per acre. Potassium Muriate at 200 lbs. per acre top dressed on 5th December 1940. There was no difference in the growth of the crop in those which received Potash and there was no significant defference in yield too. There is however likelihood of Potash plots to yield better fibre.
(*b*) C 16 with Potash	28-10-1940	17-3-1941	4 2	3 1 0	39 13 0	
2(*a*) C 17 ..	28-10-1940	17-3-1941	3 6	5 11 12	43 34 8	
(*b*) C 17 with Potash	28-10-1940	17-3-1941	3 6	4 21 8	43 34 8	
3(*a*) L. M. ..	28-10-1940	24-1-1941	3 2	2 33 7	32 20 12	
(*b*) L.M. with Potash	28-10-1940	24-1-1941	3 1	2 33 7	31 0 4	
4(*a*) Oil flax ..	28-10-1940	17-3-1941	4 0	3 1 0	36 12 0	
(*b*) Oil flax with Potash	28-10-1940	17-3-1941	3 6	2 25 14	40 33 8	
5(*a*) J. W. S. ..	28-10-1940	21-2-1941	3 0	5 26 14	27 9 0	
(*b*) J.W.S. with Potash	28-10-1940	21-2-1941	3 0	4 14 0	31 30 8	
6(*a*) C 17 ..	28-10-1940	17-3-1941	3 7	4 21 8	37 2 4	
(*b*) C 17 with Potash	28-10-1940	17-3-1941	3 3	4 21 8	28 29 8	
7(*a*) C 16 ..	28-10-1940	17-3-1941	3 5	2 10 12	37 2 4	
(*b*) C 16 with Potash	28-10-1940	17-3-1941	3 7	4 14 0	27 39 4	
8(*a*) Oil flax ..	28-10-1940	17-3-1941	3 7	5 11 12	37 32 8	
(*b*) Oil flax with Potash	28-10-1940	17-3-1941	3 7	3 16 2	46 5 4	
9(*a*) J.W.S. ..	28-10-1940	21-2-1941	3 0	5 34 7	40 33 8	
(*b*) J.W.S. with Potash	28-10-1940	21-2-1941	2 8	5 34 7	33 11 0	
10(*a*) L.M. ..	28-10-1940	24-1-1941	3 2	2 33 7	38 22 12	
(*b*) L.M. with Potash	28-10-1940	24-1-1941	3 1	2 25 14	40 33 8	

Annual Report of the Second Economic Botanist, Bengal, for the ye ending 31st March 1941.

Charge.—Mr. S. G. Sharngapani was in charge of the post of Seco Economic Botanist, Bengal, up to 30th April 1940. I took charge fr him on 1st May 1940 and held the post of Second Economic Botani Bengal, throughout the year under report.

Introduction.

Staff.—There are 1 Laboratory Assistant, 1, Field Assistant, Overseer and 6 Fieldmen attached to the section.

Tour.—The Second Economic Botanist, Bengal, was on tour for days and the other members of the staff for 136 days.

Deputation.—Maulvi Hashimuddin Ahmed, Field Assistant, went deputation to Lyallpur (Punjab) for one year in order to receive traini on cotton cultivation, and Mr. Fazlullah Mehdi has been appointed to as Field Assistant in his place.

Season.—The season was quite favourable for cotton and Dacca No cotton was grown well in all the centres as well as in Dacca Farm. T vegetative growth of Dacca No. 1 cotton was quite good but afterwa the plants were attacked with fungus disease called anthracnose eve where and the crop was a total failure. It has been ascertained th this fungus disease is a seed-borne disease and the seeds should be trea chemically before sowing in order to check the disease. Next year th seeds will be treated chemically and would be sown only in the Dac Farm and Dhakeswari Mill area on an experimental basis in order to fi out whether the disease could be controlled. No seeds of Dacca No. cotton will be distributed outside for multiplication.

Reports on the crops dealt with by this section.

Cotton.—(*a*) The scheme for the multiplication of short staple cott financed by the Indian Central Cotton Committee, Bombay, worked o at Rangamati is in the 6th year of its running. There is only one ye left for the scheme. The report will be found in Appendix I.

(*b*) *Dacca Farm.*—Eighty-three varieties are under study. Ne year only the promising varieties will be retained, rejecting the other The results of the trial of 83 varieties are given in Appendix IV. Th same promising 8 strains of the last year are being studied in detai The seeds of Dacca No. 1, Dacca No. 2, Dacca No. 3, Dacca No. Dacca No. 6 and Dacca No. 7 were grown in different places to find ou the best among the varieties.

The seed of Dacca No. 8 (Kampala) was not sufficient to be distribute outside Dacca Farm. Next year the seeds of Dacca No. 8 will b multiplied sufficiently at Dacca Farm for distribution from the selfe seeds that were taken this year. This year the leaf curling disease i Dacca No. 8 has not been noticed. The plants have sufficiently improve by adding sand to the soil.

The results of the above 6 varieties are appended below :—

(1) Kashimpur Farm, Mymensingh.

Name of the variety.	Number of plants.	Yield.	Remarks.
		Sr. ch.	
Dacca No. 1	4	..	Due to fungus disease anthracnose.
Dacca No. 2	5	0 8	
Dacca No. 3	6	1 0	
Dacca No. 5	4	1 0	
Dacca No. 6	6	1 0	
Dacca No. 7	2	0 9	

Dacca No. 5 seems to have grown best of all the varieties.

(2) From Rangpur no result has been obtained but it has been reported that Dacca No. 5 is the best of all the varieties. The plants are healthy and the sizes of the pods are bigger than the others. There is no disease.

(3) Bankura.

Name of varieties.	Number of plants.	Yield.	Remarks.
		Sr. ch.	
Dacca No. 1	48	..	Totally damaged owing to the fungus disease anthracnose.
Dacca No. 2	48	1 10	
Dacca No. 3	48	3 12	
Dacca No. 5	48	2 4	
Dacca No. 6	48	2 5	
Dacca No. 7	48	1 7	

Dacca No. 3 is the best and then Dacca No. 5 and Dacca No. 6.

Cotton.—Dacca Farm.

Varietal experiment—spacing 4′ × 2′. 8 varieties are tried. Dacca No. 1 to Dacca No. 8.

The results are given below :—

Name of variety.	Originally selected from.	Natural order genus and species.	Lint length.	Ginning percentage.	Yield [illegible]
			M. M.		Md. [illegible]
Dacca No. 1 ..	Egyptian cotton ..	G. Berbandensis ..	42·9	33·93	—
Dacca No. 2 ..	Punjab American 289F.	G. Hirsutum ..	29·4	28·07	6 [illegible]
Dacca No. 3 ..	Cambodia Co. 2 ..	Ditto ..	30·1	27·72	7 [illegible]
Dacca No. 4 ..	B. E. B. 31 ..	G. Arboreum ..	30·6	24·73	—
Dacca No. 5	Parbhani ..	G. Hirsutum ..	30·3	29·11	5 [illegible]
Dacca No. 6 ..	A. K. Buri ..	Ditto ..	29·8	29·36	7 [illegible]
Dacca No. 7 ..	Dharwar American	Ditto ..	30·6	28·79	7 [illegible]
Dacca No. 8 ..	Kampala ..	Ditto ..	34·8	30·71	10 [illegible]

Dacca No. 5 for other reasons as well as above has been found t[o be the] best of all the varieties, as has been reported from outside as wel[l as] from trials in Dacca Farm. The seeds of Dacca No. 5 will be multip[lied] sufficiently next year for distribution.

No spacing experiment has been made this year, as it has determi[ned] definitely that 4′ × 2′ is quite good for red laterite soil but in rich allu[vial] soils of Rangpur and Murshidabad, a spacing of 4′ × 4′ is recommend[ed].

Time of showing experiment. Variety—Dacca No. 2.

Date of sowing.	Actual area in cottahs.	Yield per acre. Md. sr. ch.
May 22nd	5	3 1 8
May 29th	5	4 12 8
June 15th	5	4 12 4
September 15th	5	0 36 0
September 22nd	5	0 30 0

From the above statement, it has been finally determined that th[e] best time for sowing cotton is from the middle of May to the middle o[f] June. This has also been corroborated by previous year's experi[-] ment. In districts like Midnapore, Bankura, etc., where the monsoo[n] is generally late the sowing may be continued throughout the month o[f] June.

Mixed cropping.—Cotton was sown mixed with groundnut A.H. 18, *aus* paddy, cowpea and chilly on an area of 4 cottahs.

Results are given below:—

Crops.	Actual area.	Actual outturn.	Outturn per acre.	Remarks.
	B. K. ch.	Md. sr. ch.	Md. sr. ch.	
Cotton with chillies ..	0 4 0	0 12 7	4 27 5	Chilles 5 seers.
Cotton with *aus* ..	0 4 0	0 10 5	3 35 0	*Aus* paddy 1 maund 10 seers. Straw 4 maunds 30 seers.
Cotton ..	0 4 0	0 12 7	4 26 12	
Cotton with cowpea	0 4 0	0 11 1	4 6 8	Cowpea as fodders 10 maunds 18 seers.
Cotton with groundnut	0 4 0	0 8 3	0 3 3	Groundnut 1 maund 15 seers 8 chhitaks. Fodder 12 maunds 26 seers.

A mixed cropping of cotton with groundnut has been considered to be best and it would be continued next year. It has got the advantage of enriching the soil, suppressing the growth of weeds and also will serve as an additional revenue crop. An early variety like A.K. 12-24 is recommended.

Multiplication area.—Five selected types—Dacca No. 2, Dacca No. 3, Dacca No. 5, Dacca No. 6 and Dacca No. 7—were multiplied. The results are given below:—

Serial No.	Name of type.	Actual area in cottahs.	Actual outturn.	Outturn per acre.
			Md. sr. ch.	Md. sr. ch.
1	Dacca No. 2	4.1	0 17 10	6 18 0
2	Dacca No. 3	4.1	0 25 0	9 6 0
3	Dacca No. 5	4.1	0 23 10	8 25 12
4	Dacca No. 6	4.1	0 25 4	9 9 0
5	Dacca No. 7	4.1	0 24 13	9 3 0

The yield test experiments of the above 5 selected strains were also conducted this year in the Dacca Farm in 5 cottah plots. The result is given below:—

Serial No.	Name of the type.	Actual area in cottahs.	Actual outturn.	Outturn per acre.
			Md. sr. ch.	Md. sr. ch.
1	Dacca No. 2	5	0 8 12	6 25 0
2	Dacca No. 3	5	0 24 3	7 10 4
3	Dacca No. 5	5	0 19 10	5 35 14
4	Dacca No. 6	5	0 24 4	7 11 0
5	Dacca No. 7	5	0 23 10	7 2 0

There were 6 cotton centres during the year under report, at Bankura, Midnapore, Murshidabad, Rangpur, Mymensingh and Nadia.

Details of outturn would be found in Appendix II.

In Amjhupi, Nadia district, the economics of the cultivation was worked out in detail: 16 bighas under Dacca No. 2 cotton, yielded 35 maunds of seed-cotton. The total cost of cultivation for 16 bighas came to Rs. 208 which will work out at Rs. 13 per bigha. The price of the 35 maunds of seed-cotton at the present price of Rs. 10 per maund is Rs. 350 and so the net gain is Rs. 142 which works out at about Rs. 9 per bigha or Rs. 27 per acre. This is a fairly good margin of profit for the first year of its trial in Amjhupi and so attempts are being made to extend the area under Dacca No. 2 cotton in that locality.

The economics of cultivation in the Jiaganj centre, Murshidabad, was also worked out in fair detail: 44 bighas of Dacca No. 2 cotton gave about 70 maunds of cotton and 60 maunds of groundnut grown in the intervening spaces as a mixed crop. The cost of cultivation came to about Rs. 800 and the income from the produce of both cotton and groundnut will be roughly Rs. 1,000. Hence the margin of profit is roughly Rs. 5 per bigha, *i.e.*, Rs. 15 per acre.

The detailed report about the 6 cotton centres will be found in Appendix III.

Apart from the centres, cotton was grown this year also, by many private parties, *e.g.*, Sree Hanuman Cotton Mills, Fuleswar, Midnapore Zemindary Company, Planters' Union and various other places. Good reports have been received from the above places.

Cotton was also grown in Government Farms at Berhampur, Bankura and Rangpur Tobacco Farm. Dacca No. 2 cotton has been found to have grown very successfully in all the farms. In Berhampur Farm 2 maunds 10 seers of seed-cotton have been obtained from ·16 acre of land which works out roughly at 14 maunds per acre, and in Rangpur Tobacco Farm about the same yield. In the coming season, it is expected to conduct some experiments in the Rangpur Tobacco Farm on a larger scale. The results of the time of planting and spacing experiment conducted at Bankura Farm are given in Appendix V. This year no wilt disease has been noticed in any farm.

Kharif Groundnut, 1940-41.

Groundnut.—Forty-two varieties were tried this year in an area of 15 cottahs in the N.P.A. (*a*) in 42 small plots, four lines of each variety in each sub-plot.

Varietal test.—Forty-two small plots, four lines of each variety forming one plot. The distance from line to line was 9 inches with a footpath of 2 feet from one plot to another. Seeds were first put in very thick close to each other and were thinned out later after they had attained a sufficient height, regard being given to the habit of the plants, *i.e.*, erect, semi-erect or spreading. It was later found out that the spacings varied from 6″ – 12″ from plant to plant for the erect and spreading

varieties, respectively. Sown on 11th May 1940, all the varieties came to flowering in the first week of June, the dates varying from the 2nd to 7th June for the different varieties. The earliest variety to flower was K. 3. The Spanish varieties also flowered earlier than the rest.

Vegetative growth.—The vegetative growth this year was excellent and the luxuriant growth of the plants covered even the intervening spaces. The Spanish varieties were conspicuous in the colour of their vegetative parts, stems and leaves, the colour being a whitish green in contract to the deep green of all other varieties. It was further noted that the Spanish varieties looked more erect and taller than the other varieties which were more or less trailing and spreading more sideways.

Harvesting.—Harvesting of the different varieties was done at different dates, according as they attained maturity ascertained from the outward symptoms of the yellowing of leaves and also by digging out a few plants. The details of harvesting and outturn of the varietal plot and the multiplication plots are given separately. The yield was very satisfactory as compared with that of last year. The followings are the results of the varietal groundnut—kharif, 1940-41 :—

Varietal Groundnut.

Serial No.	Name of variety.	Date of sowing.	Date of germination.	Date of flowering.	Habit of plant.	Spacing.	Date of harvest.	Yield. (outturn.)
						Inches.		Sr. ch.
1	A. 2 ..	11-5-40	15-5-40	5-6-40	Semi-erect ..	6	11-9-40	4 8
2	D. 3 ..	11-5-40	15-5-40	5-6-40	Spreading	9	30-9-40	4 8
3	B. 1 ..	11-5-40	15-5-40	5-6-40	Do. ..	9	30-9-40	4 2
4	D.-C. 13 (Sarala)	11-5-40	15-5-40	5-6-40	Semi-erect ..	6	11-9-40	4 2
5	Spanish peanut	11-5-40	15-5-40	3-6-40	Erect ..	6	31-8-40	3 12
6	Big Japan	11-5-40	15-5-40	5-6-40	Spreading ..	9	11-9-40	3 4
7	K. 3. ..	11-5-40	15-5-40	2-6-40	Erect ..	6	31-8-40	1 5
8	Spanish peanut	11-5-40	15-5-40	3-6-40	Do. ..	6	11-9-40	4 5
9	K. 1 ..	11-5-40	15-5-40	6-6-40	Do. ..	6	1-10-40	4 2
10	Kaira (local)	11-5-40	15-5-40	6-6-40	Spreading	9	2-10-40	4 12
11	Magali ..	11-5-40	15-5-40	6-6-40	Do. ..	9	3-10-40	5 6
12	Sagtar Bungalore No. 3.	11-5-40	15-5-40	6-6-40	Semi-erect	6	3-10-40	3 0
13	Dharwar No. 44 (Spanish Peanut).	11-5-40	15-5-40	4-6-40	Erect ..	6	1-9-40	3 3
14	Pandichari No. 8	11-5-40	15-5-40	5-6-40	Spreading	9	5-10-40	3 4
15	Punjab (local)	11-5-40	15-5-40	5-6-40	Semi-erect ..	6	5-10-40	2 10
16	Samrala (local)	11-5-40	15-5-40	5-6-40	Spreading ..	9	5-10-40	3 10
17	Improved Spanish peanut).	11-5-40	15-5-40	3-6-40	Erect ..	6	1-9-40	2 14
18	A. K. 8-11 ..	11-5-40	15-5-40	7-6-40	Do. ..	6	20-9-40	3 6
19	Small Japan	11-5-40	15-5-40	3-6-40	Do. ..	6	1-9-40	1 11

Serial No.	Name of varaiety.	Date of sowing.	Date of germination.	Date of flowering.	Habit of plant.	Spacing.	Date of harvest.
						Inches.	
20	A. K. 12-24 ..	11-5-40	15-5-40	3-6-40	Erect ..	6	1-9-40
21	A. K. 10 ..	11-5-40	15-5-40	5-6-40	Do. ..	6	19-9-40
22	K. 17 ..	11-5-40	15-5-40	5-6-40	Do. ..	6	20-9-40
23	Spanish Peanut	11-5-40	15-5-40	3-6-40	Do. ..	9	1-9-40
24	Big Japan	11-5-40	15-5-40	5-6-40	Spreading ..	12	20-9-40
25	Deshi variety	11-5-40	15-5-40	5-6-40	Semi-erect ..	6	7-10-40
26	Deshi No. 18	11-5-40	15-5-40	6-6-40	Erect ..	6	6-10-40
27	Deshi No. 23	11-5-40	15-5-40	5-6-40	Semi-erect	9	6-10-40
28	Deshi No. 24	11-5-40	15-5-40	5-6-40	Do. ..	6	6-10-40
29	A. H. I ..	11-5-40	15-5-40	6-6-40	Spreading ..	12	7-10-40
30	A. H. 25 ..	11-5-40	15-5-40	6-6-40	Do. ..	12	9-10-40
31	A. H. No. 32	11-5-40	15-5-40	4-6-40	Semi-erect ..	9	9-10-40
32	A. H. 45 ..	11-5-40	15-5-40	6-6-40	Erect ..	6	9-10-40
33	A ola ..	11-5-40	15-5-40	5-6-40	Do. ..	6	17-9-40
34	Godia tham ..	11-5-40	15-5-40	4-6-40	Do. ..	6	9-10-40
35	A. H. 18 ..	11-5-40	15-5-40	6-6-40	Spreading	12	12-10-40
36	A. H. 46 ..	11-5-40	15-5-40	3-6-40	Erect ..	6	17-9-40
37	A. H. 14 ..	11-5-40	15-5-40	6-6-40	Spreading	12	12-9-40
38	Spanish New	11-5-40	15-5-40	4-6-40	Erect ..	6	13-10-40
39	A. H. 113 ..	11-5-40	15-5-40	6-6-40	Spreading	12	13-10-40
40	A. H. 186 ..	11-5-40	15-5-40	8-6-40	Do. ..	12	13-10-40
41		11-5-40	15-5-40	6-6-40	Do. ..	12	13-10-40
42		11-5-40	15-5-40	6-6-40	Erect ..	6	13-10-40

Time harvesting test.—Four promising varieties as obtained from the previous year's harvest, viz., A.H. 18, A.K. 12-24, Kaira (local) Samrala (local), were tried in twenty sub-plots of 1 cottah each to find out the harvesting time. Sown on the same date 11th May 1940, each variety was harvested five times with a fortnightly interval from the first, on 26th August 1940, the last harvesting being on 25th October 1940, *i.e.*, five and a half months after sowing. The different varieties behaved differently at different harvests so far as yield was concerned. The three varieties A.H. 18, Samrala (local) and Kaira (local) showed a gradual tendency towards increase in yield till they gave the maximum outturn in the fourth harvest on 10th October 1940, while A.K. 12-24 showed the maximum yield in the third harvest on 29th September 1940. This test given much valuable information and, will be continued more extensively next year to find out the right time of harvest,—a very important and economic problem so far as groundnut is concerned.

The erect varieties are easier to harvest and cost much less too. It has therefore been our aim to find out a high-yielding erect variety. The harvesting trial will give us the right time of harvest and thereby save much harvesting cost and loss in outturn due to over-maturing and consequent rotting of the nuts under the ground.

The following are the results of the harvesting trial :—

Groundnuts.

Time harvesting—Kharif 1940-41.

Serial No.	Name of variety.	Date of sowing.	Date of flowering.	1st harvesting.	2nd harvesting.	3rd harvesting.	4th harvesting.	5th harvesting.	Total yield.	Yield per bigha.	Yield per acre.
				26-8-1940	10-9-1940	29-9-1940	10-10-1940	25-10-1940			
				Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
1	Samrala (local) ..	11-5-1940	5-6-1940	0 8 0	0 11 4	0 16 8	0 19 8	0 14 15	1 30 3	9 5 0	27 15 0
2	Kaira (local) ..	11-5-1940	6-6-1940	0 5 2	0 9 0	0 14 8	0 15 8	0 8 12	1 12 14	7 0 0	21 0 0
3	A. H. 18 ..	11-5-1940	6-6-1940	0 4 12	0 5 12	0 12 8	0 14 8	0 13 2	1 10 10	6 25 0	19 35 0
4	A. K. 12-24 ..	11-5-1940	4-6-1940	0 5 10	0 8 10	0 10 4	0 8 14	0 2 6	0 35 12	4 29 0	14 7 0

Remarks.—It will thus appear that sown on the same date 11th May 1940 and flowering almost simultaneously, the three varieties, A. H. 18, Samrala and Kaira (local) show an onward tendency towards increase in yield till they reach the maximum in the fourth harvesting, *i.e.*, just five months after sowing. A. K. (12-24) seems an earlier one giving the maximum outturn about a fortnight earlier than the rest.

Mustard Multiplication Centres, 1940-41.

The mustard centres were this year selected in the districts of Mymensingh, Rangpur, Malda and Murshidabad as against Dacca, Rangpur, 24-Parganas and Murshidabad of last year. The centres of Dacca and 24-Parganas failed hopelessly in 1939-40 and the centres were consequently shifted this year to Mymensingh and Malda. Last year 231 maunds 3 seers 12 chattaks of Tori No. 7 and 202 maunds 9 seers of Rai No. 5 were collected. Out of these 220 maunds 38 seers 8 chittaks Tori No. 7 and 114 maunds 30 seers 12 chittaks Rai No. 5 were distributed free to the cultivators.

Short Report on the Centres.—*Mymensingh, Kashimpur Centre, 20 miles away from the district headquarters near Maharaja's Farm.*—The total area in this centre is 125 bighas all under Tori No. 7. Detailed reports may be obtained from the Agricultural Demonstrator's reports. "Aphis" attack was mentioned of by the Agricultural Demonstrator on 8th January 1941 and instructions of spraying tobacco decoction were given to him. The attack, it seems, was not very serious and was controlled by tobacco decoction spraying. Sowing began in the centre early in November, and, went up to the 20th. The plots were scattered.

Results.—The growth in most of the plots was good and the outturn was also satisfactory. Only 65 maunds 7 seers 8 chittaks could be raised, purchased from this centre as the cultivators were quite unwilling to part with the seeds which they have found to be quite good for their next year's sowing.

Saktipore Centre (Murshidabad district).—*Saktipore centre (Murshidabad district), 21 miles from the district headquarters.*—Only 35½ bighas could be put under Rai No. 5 in this centre and Tori No. 7 could not be distributed at all. When in September, the centre was selected, and, a general list of cultivators was submitted by Agricultural Demonstrator, Saktipore, it was shown that more than 150 bighas could be available. But, as the Demonstrator could not join in time, only 35½ bighas could be acquired by him, as by that time the cultivators had engaged theirs land for other crops.

According to Agricultural Demonstrator's reports the sowing ranged from 27th October 1940 to 5th November 1940. Of these 35½ bighas, 15 bighas did not germinate at all due to drought and of the rest 20 bighas that germinated, all did not survive. The season was late and for want of moisture, the germination was so poor. In January the standing crop was only on about 8 bighas, in a very poor condition. No serious insect attack was reported.

Results.—This centre was a failure and only about 15 seers of Rai No. 5 have been raised. The failure was mainly due to excessive drought and late sowing as the Demonstrator appointed in the first instance did not join at all and it took time to appoint another suitable candidate.

Barahazratpur Centre (Rangpur).—*Barahazratpur centre (Rangpur), about 22 miles from the district headquarters.*—The centre includes three adjacent villages covering an area of 155 bighas in all in small plots. The Agricultural Demonstrator had joined on 1st October 1940 and after necessary preparations, sowing commenced on the 2nd November and was completed on the 16th November. Sowing was not

late in this locality as the cultivators also sow their seeds during this period. Germination, as reported by the Agricultural Demonstrator, was good and the whole area looked promising. By the third week of December 1940, two-thirds of the area, as reported by the Agricultural Demonstrator, were bearing grains and the rest would do so in a week's time. That means the whole of the area will bear grains and we would expect a satisfactory outturn from the centre. No serious insect attack was reported and the centre passed through normal weather conditions.

Result.—This centre was a success and 227 maunds of Tori No. 7 have been raised from this centre.

Laskmipur Centre (Malda).—*Laskmipur centre (Malda), four miles away from the headquarters.*—The centre was in three or four compact blocks, on areas primarily given to mustard in this locality. But weather conditions were abnormal and unfavourable and the land became too hard and dry for any crop. Nevertheless, of the 150 bighas selected, 130 could be sown, but, the germination, as reported by the District Agricultural Officer, Rangpur, was very bad due to continued drought conditions. The plots were almost all barren, without any plants, and thin patches of plants could be seen here and there, struggling for existence with what little moisture it could get. The plants that did come out also showed poor growth and a fading condition. About 25 bighas were standing in a dying condition, and no good outturn could be expected. The standing crop by the end of December 1940 was not promising.

Result.—This centre was failure due to unprecedented drought in the district and only 24 maunds 1 seer Tori No. 7 have been raised.

This year in total 800 maunds of mustard were collected from multiplication centres and demonstration centres as against about 400 maunds of last year. These will be distributed free to the cultivators next year.

Dacca Farm.—The Departmental recommendations Tori No. 7 and Rai No. 5 were sown here in an area of 17 cottahs 8 chittaks each and gave an outturn of 1 maund 8 seers and 1 maund 16 seers, respectively, *i.e.*, 1 maund 24 seers and 1 maund 16 seers per bigha, respectively. The outturn was not good.

The results of mustard grown at the Dacca Farm are appended below:—

Variety.	Area.	Yield per bigha.	Yield per acre.
	B. k. ch.	Md. sr. ch.	Md. sr. ch.
Tori No. 7	0 17 8	1 24 0	4 32 0
Rai No. 5	0 17 8	1 16 0	4 8 0

Rahar, 1940-41.

Rahar.—Three different kinds of tests have been undertaken this year, the variety test of 144 types, uniformity trial of Comilla 6·20 and the 12 early types.

(*a*) The varieties have been put in 4 sub-plots, each 36 types of 10 plants each. The distance is 4 feet from line to line and 3 feet from plant to plant with a footpath of 5 feet in between the plots. Sown

from 11th = 13th May, the plants came to flowering in the middle of August. B.K. 5, B.K. 15 have been found to flower and form seeds very early. It seems to be a mutation, the seeds from the two plants have been kept separate and will be tried under special observation next year to see if they breed true. Seeds have not been fully developed.

The following varieties seem to be promising:—

Serial No.	Name of type.
1.	98
2.	B. K. 15
3.	Satara (red) (*a*)
4.	Comilla (B)D.C. (*c*)
5.	12·55
6.	Chhatia (*a*)
7.	T. 2 E
8.	T. 36 (*b*)
9.	T. 35 (*b*)
10.	T. 4(E)
11.	Bogra
12.	Naogaon
13.	T. 35 (*a*)

(*b*) Twelve early types, as obtained from the previous year's harvest, were tried again this year in single equal size plots ($2\frac{1}{2}$ cottahs each) which will give data both as regards yield of the different varieties and the time taken to attain maturity. Sown on the same date, *i.e.*, 11th May 1940 the varieties harvested on different dates as they matured.

The result is as follows:—

Serial No.	Name of variety.	Date of sowing.	Date of flowering.	Date of pod formation.	Date of harvesting.	Total yield.	Average yield per acre.
						Sr. ch. Tol.	Md. sr. ch.
1	Comilla 6·20 ..	11-5-1940	25-9-1940	30-9-1940	16-12-1940	18 9 3	11 6 0
2	Satara (red)(a)	11-5-1940	29-10-1940	3-11-1940	16-12-1940	13 12 3	8 10 0
3	Ludhiana ..	11-5-1940	15-10-1940	20-10-1940	16-12-1940	13 11 2	9 $8\frac{1}{4}$ 0
4	Comilla ..	11-5-1940	10-10-1940	25-10-1940	16-12-1940	18 13 1	16 12 0
5	B. K. 15 ..	11-5-1940	19-10-1940	24-10-1940	16-12-1940	14 10 2	8 31 0
6	Chhatia ..	11-5-1940	9-10-1940	5-10-1940	16-12-1940	12 4 2	9 14 0
7	Durdhondi ..	12-5-1940	28-10-1940	2-11-1940	17-12-1940	14 5 3	8 24 0
8	Midnapore ..	12-5-1940	31-10-1940	5-11-1940	13-12-1940 / 17-12-1940	17 11 1	10 $24\frac{1}{4}$ 0
9	Rangpur ..	12-5-1940	31-10-1940	5-11-1940	17-12-1940	20 1 1	12 3 0
10	Bogra ..	12-5-1940	18-10-1940	23-10-1940	17-12-1940	19 7 2	11 $26\frac{1}{4}$ 0
11	D. W. 5. ..	12-5-1940	19-10-1940	24-10-1940	18-12-1940	16 7 4	9 35 0
12	Mymensingh ..	12-5-1940	16-10-1940	21-10-1940	23 12-1940	21 4 0	12 12 0

(*c*) Comilla 6·20 was tried in a separate plot in 40 lines of 42 plants each sown on plant to a row system. The seeds of the 40 highest yielding plants were kept separate for next year's sowing.

Each plant gives an average yield of 3 chittaks 4·15 tolas of seed and the highest yielding plant produces 6 chittaks 1 tola. The actual yield of the total area (1 bigha 8 cottahs 10 chittaks) is 3 maunds 4 seers 9 chittaks or an average yield of 6 maunds 24 seers per acre.

(*d*) Comilla 6·20 was again sown broadcast in an area of 14 cottahs and the standing crop compared very favourably with the other three trials, the actual yield being 1 maund 37 seers in all or an average yield of 8 maunds 10 seers per acre.

Due to a sudden stormy weather with a heavy rainfall in the end of September, the Rahar crop sustained a setback in the otherwise vigorous growth and many of the plants were falling prostrate, as the ridges on which they stood were about to be washed out. But, the broadcast area stood this unfavourable weather successfully, probably due to their not being sown on ridges.

Varietal experiments.

(Fodder and Pulses.)

There were 150 sub-plots each measuring 10′×6′. The distance from line to line was 1½ feet. There were five lines of each variety in each plot. The experiment was conducted to find out the promising types to be grown next year. The promising type of each crop is given below:—

	Name of type.	Yield of 10 selected plants in gramme.
Juar	1. Australian Sumec.	252
	2. Juar self plant from mixed type	242
	3. Amber corn	232
Juar Isolation of single plants	1. Juar No. 98	351
	2. Juar No. 100	337
	3. Juar No. 2	325
Bajra	1. Bajra 1/3	73
	2. Bajra 11/10	57
Maize	1. Tulbulia	510
	2. Tinpakia	479
	3. Purnia	478
Tori	1. Tori No. 4	44
	2. Tori No. 8	41
	3. Tori No. 25	40
	4. Tori No. 7	32
Rai	1. Rai No. 5	130
Agartala Kalai	1. Yellow small	123

		Name of Type.	Yield of 10 select-ed plants in gramme.
Mysium Kalai	1.	Dark Grey	102
Miscellaneous Kalai ..	1.	Kushi Kalai 3(*d*)	90
	2.	Kali Kalai	79
Mung	1.	Mung No. 18 ..	92
	2.	Mung No. 23 ..	74
	3.	Jain (Kattak)	73
	4.	Mung I. P. 18	62
Kheshari	1.	Kheshari (Dinajpur) ..	76
	2.	Kheshari (Malda) ..	67
	3.	Kheshari (Kishoreganj) ..	67
Lentil	1.	Lentil No. 47 ..	12
	2.	Lentil No. 24 ..	10
	3.	Lentil No. 9 ..	7
Gram	1.	I. P. 25	141
	2.	I. P. 17	84
	3.	I. P. 6	82
	4.	P. 58	65
	5.	S. 4	29
Cowpea	1.	Inqueculutus	298
	2.	New Era	290
	3.	Prudal	282
	4.	Barbati Kapoor (W. red) ..	282
	5.	Groit	257
	6.	W. P. W. big L. Grey ..	204
	7.	Cowpea Brabham ..	202

Fodders, 1940.

Fodders.—The permanent fodder plot in the K. K. area, 1 bigha cottahs, was thoroughly ploughed up this year, and, the plot w resown with 16 different types of fodders in single plots of equal si In a portion of the same plot, all these sixteen types were again sow mixed and broadcast. Of the sixteen types, Napier grass, Natal gra Marker's grass, African panicum and Guinea grass showed very go growth. The grasses are being cut and sent to the farm and a com parative yield record is being maintained for our next year's sowing.

Napier still shows best results, but there are two or three othe which promise to do well. Two cuttings have already been made an another cutting is expected.

Of other fodders, Juar and Bajra, are of most importance. Tw types of Juar, Rajshahi and Krishnagar, and three of Bajra, viz A 1/3, 11/10 and 4/3, were sown in the M. M. Grove in a total area 3 bighas 14 cottahs 14 chattaks. Sown on 12th May 1940 in an ar of 1 bigha 4 cottahs, Krishnagar Juar was harvested on 12th Augu 1940 and gave an outturn of 135 maunds as against 140 maunds Rajshahi Juar. Burma Juar—a type of Juar given to us by the Liv Stock Expert, Bengal,—was sown in an area of 1 bigha 12 cottahs an gave an outturn of 2 maunds 18 seers. It was found badly mixed an attempts will be made next year to select the most important typ based on seed colours.

The three types of Bajra were sown on 12th May 1940 in plot of 6 cottahs 10 chattaks each and harvested on 13th July 1940, Bajra 4/3 gave an outturn of 32 maunds, 11/10, 33 maunds and A 1/3, 31 maunds that will work out an outturn of 297, 307 and 288 maunds, respectively, per acre.

W.P.W. Cowpea (black) was sown in the N.P.A. (*a*) area in a plot of 17 cottahs 3 chattaks on 16th May 1940 and harvested on 12th July 1940 giving an outturn of 66 maunds 20 seers, *i.e.*, 230 maunds per acre.

Of the four water grasses collected and handed over to us by the Live-Stock Expert, Bengal, viz., Kerali, Khela, Uri and Khurma, only Khela is still struggling to survive, the others have been completely washed out. It seems that these local *bil* grasses will not do well in the closed standing water of a tank. The results will be found in Appendix VI.

Linseed.—The linseed experiments, financed by the Imperial Council of Agricultural Research, have been conducted both in Dacca Farm and Berhampore Farm. The result of Berhampore Farm is not yet obtained for inclusion in the report. The full report about linseed field experiment in the Dacca Farm is given in Appendix VII.

Programme of work for next year.

1. **Groundnut.**—Forty-one general varieties will be tried in three groups according to the habit, namely, erect, semi-erect and spreading. The spreading varieties will be given more interspaces and the spacing will be gradually decreased from the spreading to the erect variety. These forty-one varieties will be under detailed study from point of view of spacing yield, maturity and freedom from disease.

Four selected varieties Samarala (local), Kaira (local), A.H. 18 and A.K. 12-24 would be grown in 10 replications. These will be harvested 10 times with a weekly interval. This test will give much valuable information to find out the right time of harvest—a very important and economic problem so far as groundnut is concerned.

A.K. 12-24, the erect variety will be multiplied this year in an area of 17 cottahs for seed multiplication purposes.

2. **Mustard.**—About 800 maunds of mustard have been raised this year from our multiplication centres and demonstration centres. These would be distributed free next year to the cultivators.

3. **Rahar.**—The varietal experiment and the experiment with the 12 early types will be carried on this year in the Kharif season. There are a few varieties in our pure-lines, which seem to be very late in the soil of Dacca Farm. These are a few Pusa types. They will be discarded from our group in the Kharif season. They will, however, be tried in the Rabi season, as comparatively, they do better in this season. Experiment of sowing in the Rabi season will also be carried on.

The recommended type Comilla 6·20 will be multiplied this year. The uniformity trial of Comilla 6·20 will be continued. The seeds of the 40 highest yielding plants of Comilla 6·20 have been kept separately for this year's sowing.

types. They are as group better than any sample obtained so far. Their mean ginning percentage comes to 42·73.

Area near Manikchari in north-west was resurveyed this year. This area had given samples that had numerous high ginning numbers during the survey of 1939-40 but their lines on Rangamati Farm were no approach to the original ginning percentage. This year's survey gives no outstanding samples.

Most of the survey collection comes from the south.

It is observed that good ginning strains are present in areas away from the beaten track, as yet unapproached by seed traders. The Bohmong Circle once again exhibits numerous cases of combination of high ginning and long staple. Quite a large proportion sample is 19 m.m. long and combination of 22 m.m. with ginning percentage of 40 per cent. is not very rare. Only one interesting sample has given 25 m.m. and 40 per cent. G.P. Cases of 11-12 m.m. lint length are also found.

The Bohmong Circle cotton samples show better weight per boll than the northern cottons. Whereas the northern collections cannot show even 1 per cent. of bolls weighing more than 3 gms. and only very rare instances of bolls weighing 3·5 gms. the southern collection shows some 12 per cent. plants weighing more than 3 gms. and 3 per cent. weighing 3·5 gms. The number of seed per boll is higher in southern cottons, although one sample had 13 seed to a lock; 11 seeded locks are not rare. In the interior and up Matamuri and Sengoo rivers the percentage increases to 16 per cent. the least and 35 per cent. as maximum. Places like Kodokhyong, Singfa, Chainfa and Mango have given samples that are satisfactory in every way. There is still some portion in this tract that is not exhaustively surveyed yet. This will be finished next year.

Minimum standard of selection for this year was taken as 40 per cent. G.P., 2·5 gms. of weight per boll and 27 seed per boll.

A preliminary survey tour of Garo Hills was undertaken this year. The time of visit is a very important factor in survey work. The Deputy Commissioner, Garo Hills, was consulted about it. (There being no Agricultural Officer for the district.) But as the season was early most of the jhooms were bare of cotton in the second week of December. However, the Garden Overseer had instructed the Jumias near about Tura to delay picking. 300 samples from plants that were similar to Garo plants observed to do well at Rangamati, were collected.

57-60 seeded bolls were not an unknown phenomena in these parts. Another striking feature of cotton plants in Garo Hills was the pink colour of the dry bracteoles pointing to their freedom from attack of moulds and fungi due to drier climate in winter. Every sample brought gives more than 45 per cent. G.P.

Experiments and results.

(a) Single lines of survey.

In all there were 1,738 lines of 10 plants each, coming from single bolls of previous season; these come from collection made in 1938-39 and 1939-40. A number of lines were lost due to bad location.

1939-40 survey covered a very large area of the tract. Most of the northern and a some of the middle and eastern region mauzas were represented. Ginning percentage and lint length frequencies were more or less similar for all mauzas, except in two cases of Ramgarh Circle where markedly high ginning samples were obtained. Selection was based on weight of 2·8 gms. per boll and ginning capacity of 40 per cent. as minimum qualification. There were 204 plants selections from the lines of 1939-40.

Where the terraces were not water-logged or the soil was not very poor final stand of the crop was good. There time of flowering in most cases was between last week of August and 1st week of September and after paddy harvest. Individual cases of late flowering were observed but these were very few and were not the characteristic of the line.

The following characters were observed: Node numbers, stand, number of bolls per plant, yield, G.P. lint length and coarseness. It is expected that about 150-200 lines will show uniform performance in their morphology besides being good yielders and ginners. It is proposed to take them out as small bulks while maintaining selection plants in replicated progeny rows or replicated lines. It may be observed that a large number of selections did not come up to the standard ginning percentage and yield. The lines from Diginala gave very good yield and showed good ginning capacity. The mean lint outturn of terrace sown lines comes to 38·8 for Chakma Circle, lines 38·48 for Mong Circle and 38·12 for Bohmong Circle.

(b) Replicated progeny rows.

There were 36 progenies under observation. These were in 6 replications. Limited area given to cotton experiments and odd sizes of the terraces did not permit 10 replications but each row had 10 plants. The numbers 1 to 23 come from seven different families while numbers 24 to 36 are the pick of survey lines that were tried at Rangamati Farm for two years. No significant differences were observed in progenies within families; either in stand at maturity, yield or G.P. except in the case of family 5 where significance at 0·5 per cent. level was obtained in data for yields. Family of 6 consisting of progenies 17, 18, 19 and 20 has the best average ginning percentage. It is also one of the good yielders being equal to families 4, 2, and 3. This family 6 comes from Local 18/19 family. Family 4 is fairly good. It is very close to 6 both in yield and ginning percentage. Family 4 comes from Garo Hills 17/12 obtained at the beginning of the scheme and had numbers 8, 9 and 10 in progeny rows.

(c) Replicated rows.

Numbers 37 to 95 were included in this series. Each row carrying 10 plants was originally in 4 replications, but as the 4th replication showed poor stand it had to be discarded.

(d) Acclimatisation lines and bulks.

The Deputy Commissioner, Garo Hills, Naga Hills, Superintendent, Lushai Hills, Subdivisional Officer, Khashia and Jaintia Hills, and Political Agent, Manipur State, were requested to send 1 lb. of seed cotton and some seed, which they sent in time. Subdivisional Officer,

Khashia and Jaintia Hills sent seed only. Thirteen seeded locks, 50 in number from each area, were first taken out from each lot. These were ginned individually. Then all locks containing more than 13 seed were separated and ginned making bulks of the regions. The bulks were sown on the terraced lands and jhoom. The single lock lines on terraces only. Germination was good in all cases except in Khashia and Jaintia seed in which only few plants were obtained. Leaving Manipur, which is the earliest flowering type (6th node) and Lafang which is very late (20th node) flowering starts in 7th week after planting in all cases.

The lines from Garo Hills were very vigorous but poor in yield. The size of the bolls in Garo Hills lines did not suffer. They measure 2½ to 3 inches in length, containing 54·57 seed per boll. Ginning percentage in these lines varies from 42 to 49. Staple length variation exists to some extent. Boll weight is between 4·5 to 5·5 gms. As stated last year, these cottons did tend again to shed their bolls excessively. So that ultimately yield became poor.

The Naga Hill strains are not so rough as the Garo strains. Ginning percentage in these varies from 40-48. Better adaptation to local condition was found in these lines. They, therefore, give better yields than the Garo Hills lines. The size of boll is smaller in this case than in the Garo types.

Although all the types from Lushai Hills do well here it is doubtful if these types will be of any advantage to this district. They have more or less the same ginning percentage as ours. In some lines, it is even poorer. Only two types have been selected for propagation. They are both good, ginning 45 per cent. and 43 per cent. and are early.

Manipur cottons are very early. They are also prolific but they are soft linted. Their ginning percentage is sometimes 39 per cent.

Khashia and Jaintia plants gave a very poor performance.

(e) Small yield trials on block 11′ × 11′ (1/360 acre).

There were 5 small bulks in 5 replications each. Three of these come from last year's numbers that were sent for Technological tests. No. 9 was No. 1 of this year, No. 14 was No. 2 and No. 19 was No. 3 of this year. No. 4 was fairly good strains and No. 5 served as a control of the experiment.

Taking height in August as index of vigour of plants No. 1(9) shows less height than No. 2(14) and No. 3(19), which are slightly better exceeding No. 1(9) by an inch.

The picking behaviour of the strains is very much alike. All giving one heavy picking in the middle of November. Amongst the strains No. 3 (Mahalchari 19) gives slightly bigger yield in second picking. No. 4 also shows similar behaviour.

No. 2(14) shows better boll numbers per plant than any others. No. 1(9) is a close second being some 12½ per cent. better than control. No. 1(9) has the poorest weight per boll. In this respect No. 4 is the best. No. 3(19) is slightly better than the control while No. 2(14) is equal to control. No. 1(9) boll is some 1 per cent. less in weight than control.

In yield in grammes per plant No. 2(14) tops the list being 31 per cent. better than control; No. 1(9) is second. This is 14·6 per cent. better than control, while No. 3(19) is 11 per cent. better. The performance of Bangalhalia that is No. 4 is lower than normal. But yield figures of plots do not agree with this count as stand greatly influences yield.

No. 1(9) scores above all the strains in ginning percentage and coarseness of lint. Above all its ability to maintain fairly good stand even in bad slopes makes it the best yielder; consequently more desirable too. Its weight per boll is the smallest yet its yield per plant works to a fairly good average. It gives a heavy first picking. Its main advantage is its coarseness, its high ginning percentage and very good stand at maturity.

No. 2(14) surpass all other strains in its number of bolls per plant and in yield per plant as its weight per boll is also good.

No. 3(19) gives a biggish second picking which is not much of an advantage in early seasons for the second picking is likely to be very small. It has the best weight per boll, therefore, the yield per plant is higher than No. 1(9).

Table showing yield characters of bulks 1-5.

	Leaf Shape.	Node numbers.	Boll per plant.	Boll weight.	Yield per plant.
				Gms.	Gms.
No. 1 ..	Broad ..	14	3·6	2·1	8·18
No. 2 ..	Narrow ..	15	3·9	2·36	9·36
No. 3 ..	Narrow ..	15	3·3	2·4	7·92
No. 4 ..	Narrow ..	15	2·5	2·6	6·32
No. 5 ..	Narrow ..	16	3·2	2·36	7·14

(f) Seed multiplication bulks.

Eighteen seed multiplication bulks (Nos. 6-23) were formed out of survey material tried at Rangamati last year. Morphologically they are pure for leaf and flower. These are all very promising strains and have done well on the jhoom this year also. The best five of these will be tried in replicated series next year.

Being in single blocks the yields of individual bulks are not very trustworthy. The weight per boll ranges from 2·2 gms. to 2·8 gms. There are two strains however which give higher values. Strain 10 comes from Bangalhalia. Weight per boll in this case is 3·2 gms., confirming facts found in replicated yield bulk; where also Bangalhalia strain gives the best weight per boll. Strain No. 15 comes from Toimidong but has given poor yield.

Leaving aside bulks 9 and 10, yield per plant varies from 11 to 17 gms. Bulk 9 gives a very high figure of 22 gms. and that for bulk 10 is 19·2 gms. No. 16 is the poorest in this respect in this series.

All these bulks are fairly early except No. 9 (16th node) and No. 21 (16th node). These two strains are slightly later in flowering.

With regard to their picking behaviour most of the strains give a heavy first picking which is often 8 to 10 times the weight of the second; but 9, 10 and 20 give bulky second picking. No. 9 and 10 give nevertheless a heavy picking. No. 9 is one of the coarsest types in our local collection.

(g) *Assam cottons.*

Cottons from Garo, Naga and Lushai Hills were in blocks. One strain of Garo Hills (Naltabari) received from the Director of Agriculture, Bengal, give 50 per cent. G.P. with moderately good stand as compared with other strains from Assam. The next best strain giving 46 as ginning percentage comes from Naga Hills. 1940-41 was not the first year of its trial. It is an isolation from seed obtained and sown in 1939-40. One of the Lapui blocks (seed from Lushai Hills) gave good stand but its ginning percentage is not very encouraging, only 42.

(h) *Jhoom and terrace bulks.*

Eight small bulks Nos. 24-31 were sown on jhoom and terraced land to compare their yields and ginning percentages. It was found that jhoom yields are heavier than terrace yields due to large plant population on Jhumes and increased capacity of individuals to bear a heavy crop. An increase of 1·5 to 3·5 in ginning percentage is noticeable in jhoom part of experiment. The jhoom gives only two pickings while the terraces give small continuous picking.

(i) *Other small bulks.*

Small bulks were constituted out of seed that was found to be good but which had no place on the terraces. These are 48 in number. The following numbers are good in yield and ginning percentage:—

	Yield. Gms.	G. P.
55	974	44·3
59	585	42·9
61	328	44·2
64	412	43·0
66	435	43·6
68	352	43·3
70	313	44·2
75	296	44·9
80	478	43·8

It may be necessary to say here why the size of all bulks is so small. All these bulks were formed from the seed of single lines or some from replicated lines. The yield of seed per plant is less here due to higher ginning percentage and bigger weight of seed, while seed rate for jhoom is very high being 40 lbs. to an acre so that produce of an acre can sow at best four next years. By observing economy of seed it may be possible to build 1/40th acre plot for replicated trials next year.

Summary in non-technical language.

Survey of the district.—Southern and eastern parts of the hill tracts were thoroughly sampled this year. These samples hold out a grand promise as they have given numerous plants of good ginning capacity and coarseness. 8,841 samples were collected from 74 villages. Those coming from the south show heavier bolls than those of the north. The proportion of plants giving more than 40 per cent. lint is higher in the north than in the south. The southern cottons contain higher number of seed to a boll.

During the year under report 1,738 lines were under observation. These came from the survey of 1939-40. As is bound to happen a large number of cases showed less ginning capacity than the selected parent sample. Roughly 200 lines have given more than 42 per cent. lint and a yield of 25 gms. to a 10 plant space.

Thirty-six replicated lines were studied this year. Nos. 18, 19, 26, 31, 34 and 35 are judged to be the best in yield and ginning percentage. Their yield per plant works from 7·5 gms. to 9·6 gms. and give more than 41 per cent. lint. Their stand at maturity is also good. No. 31 is very coarse. It is one of the three coarsest local strains with us and is almost as rough as Cernuum.

Fifty-nine lines replicated three times were formed with a view to keep a purified stock for replicated progeny rows. Nos. 54, 72, 85 and 95 were found to be good, all giving above 42 per cent. lint and giving good yield besides being pure in leaf and flower.

From the small amount of seed obtained from single lines, a few bulks were built up for trial on jhoom and for seed multiplication. There was a strain of replicated bulk in which Nos. 1/9, 2/14, and 3/19 of last year, tested by the Director of Technological Laboratory, were included. No. 1/9 has given very satisfactory yields in all the replications. It gave 44·6 per cent. lint. The Director of Technological Laboratory reports favourably on it.

One more very promising bulk that has shown good performance is No. 9. This is a very coarse local cotton, one of the coarsest three growing here. It is sent to the Technological Laboratory for determination of fibre weight and wax content.

No. 66 bulk is also very coarse. This bulk too is sent to the Director of Technological Laboratory.

This is the first year that this section has more than 1 lb. seed of 15 bulks, that have proved their merit. Testing them on larger scale for yield, for selecting the best will be done next year. It is hoped that before long a strain will be ready for distribution of seed.

Programme of work for the year 1941-42.

1. *Trials of promising strains in replicated progeny rows for comparing stand, yield and ginning percentage.*—It is expected that 60 progenies will have to be tested. If possible 5 plants to a row in 10 replications will be the layout. All the chosen plants will have minimum ginning percentage of 41, yield of 5 gms. of Kapas per plant as average of 10 plants space of this year and 60 per cent. stand.

2. About 75 replicated lines of preliminary selection from survey lines of the year 1940-41 will be under observation.

3. Selected plants of local Garo Hills crop of 1940-41 will b under observation. Selection from Naga Hills will also be includ in this. Forty per cent. stand and 42 as ginning percentage will minimum standard of selection.

4. Selection from survey of 1940-41 will form about 1,700 sing lines.

5. Trial of Garo Hills seed collected this year.

6. Yield trials in jhoom on 1/40th acre plots in 5 replications 5 best bulks of this year, namely, No. 1(9), No. 5, No. 8, No. 9 an No. 21.

7. Bulk trial of Assam cottons for acclimatising them on loca jhoom.

8. Preliminary bulks of all lines giving average 41 ginnin percentage, and 25 gms. yield per 10 plants space.

9. Survey of the rest of Chittagong Hill Tracts and Garo Hil and Naga Hills will be undertaken.

APPENDIX II.

Statement showing the area and seed cotton obtained from eac centre, 1940-41.

Name of the centre.		Actual area under cotton.	Quantity of seed cotton.		Remarks.
			Dacca No. 1.	Dacca No. 2.	
		B. K.	Md. sr. ch.	Md. sr. ch.	
Nadia ..	Dingnagar Centre	11 0 (D. 1 and D. 2).	1 10 0	23 0 0	Dacca No. 2 cotton was good.
	Amjhupi Centre	16 0 (D. 2)	..	35 0 0	
Bankura ..	Dacca No. 1 ..	0 12	0 7 8	..	Dacca No. 1 cotton were spoiled by fungus dis anthracnose. Dacca No. cotton was good.
	Dacca No. 2 ..	16 0	..	30 27 0	
Mymensingh	Dacca No. 1 ..	2 0	0 15 0	..	Dacca No. 1 cotton spoiled fungus disease.
	Dacca No. 2 ..	19 0	..	16 30 0	Dacca No. 2 cotton is not goo
Murshidabad	Dacca No. 1 ..	7 0	2 27 0	..	Dacca No. 1 cotton spoiled fungus diseases.
	Dacca No. 2 ..	44 0	..	70 0 0	Dacca No. 2 cotton is very g Groundnut was sown a with cotton as a mixture and an outturn of 60 maun groundnut was obtained the cotton plot.
Rangpur ..	Dacca No. 1 ..	13 10	0 15 0	..	
	Dacca No. 2 ..	23 10	..	26 30 0	
Midnapore ..	Dacca No. 1 ..	9 1	6 3 0	..	Dacca No. 1 cotton was affected by fungus d anthracnose and all the dried up.
	Dacca No. 2 ..	9 8	..	2 39 0	

N.B.—Jiaganj centre at Berhampore was proved to be the best of all the centres.

APPENDIX III.

In the year 1940-41 there were 6 cotton centres at Midnapore, Bankura, Murshidabad, Rangpur, Nadia and Mymensingh.

The description of each centre is given below:—

(1) *Midnapore.*—In Midnapore, cotton was grown at Dhanguri, Nimtala and Manikpal Farm of Raja Bahadur of Lalgarh.

At Dhanguri there were 4 bighas 10 cattahs of land under Dacca No. 1 and 3 bighas 17 cattahs of land under Dacca No. 2. At Nimtala there were 4 bighas 11 cattahs of land under Dacca No. 1 and 5 bighas 11 cattahs of land under Dacca No. 2 cotton. At Manikpal Farm there were about 9 bighas of land, all under Dacca No. 1 cotton.

Dacca No. 2 cotton has grown fairly well and there was no disease except red cotton bugs, but the plants of Dacca No. 1 very badly attacked with a fungus disease called anthracnose and almost damaged, Sulphur dusting and Bordeaux mixture were applied but was of no effect.

The total outturn of Dacca No. 1 obtained from Dhanguri and Nimtala centres is 6 maunds 3 seers of seed cotton and the total outturn of Dacca No. 2 cotton obtained from the above centres is 2 maunds 39 seers. This outturn may be considered as very poor.

(2) *Bankura.*—In Bankura, cotton was grown at Jhantipahari. About 40 bighas of land were under cultivation. Dacca No. 2 cotton has grown fairly in this centre, but the outturn is not very good, as the seed was sown very late, and most of the plants of the first sowing died on account of drought and a second sowing had to be made.

The total outturn obtained from this centre was 30 maunds 27 seers of seed cotton.

(3) *Murshidabad.*—In Murshidabad district, cotton was grown in Jiaganj. The land belongs to Rai Sahib S. P. Bhattacharyya, retired Sub-Deputy Collector: 50 bighas of land were put under cotton. Rai Sahib took very keen interest in its cultivation and the crop grew exceedingly well. Dacca No. 1 cotton was grown in 7 bighas of land but the crop was a total failure owing to the fungus disease. Dacca No. 2 cotton has grown very well. He grew groundnut in the intervening spaces of cotton and an outturn of 60 maunds of groundnuts has been obtained. The total quantity of cotton collected was 70 maunds.

The profit and loss have been calculated and it comes as under 44 bighas of Dacca No. 2 cotton gave 70 maunds of seed cotton and 60 maunds of groundnut (grown in the intervening space of cotton as a mixed crop).

The total cost of cultivation comes to about Rs. 800. The income from the produce of both cotton and groundnut is—

		Rs.
70 maunds of cotton at Rs. 10 per maund	...	700
60 maunds of groundnut at Rs. 5 per maund	...	300
Total	...	1,000

Hence the margin of profit is roughly Rs. 5 per bigha, *i.e.*, Rs. 15 per acre.

(4) *Rangpur*.—In Rangpur, the cotton was grown in Bardhakuti Wards Estate. There were 13 bighas 10 cattahs of land under Dacca No. 1 cotton and 23 bighas 10 cattahs under Dacca No. 2 cotton. Dacca No. 2 cotton grown fairly well but Dacca No. 1 cotton was almost damaged by anthracnose disease. The outturn is good. An outturn of 15 seers of Dacca No. 1 cotton and 26 maunds 30 seers of Dacca No. 2 cotton has been reported.

(5) *Nadia*.—In Nadia, the cotton was grown at Dignagar. The area was only 11 bighas. Dacca No. 2 cotton has grown fairly well. An outturn of 1 maund 10 seers of Dacca No. 1 cotton and 23 maunds seed cotton of Dacca No. 2 has been reported.

Besides this, the Midnapore Zemindary Company of Nadia district have put 16 bighas of land at Amjhupi under Dacca No. 2 cotton. The cotton has grown very successfully in that area and an outturn of 35 maunds of seed cotton has been obtained. The economics of the cultivation have been worked out in detail as follows:—

Cotton area	16 bighas.
Outturn obtained	35 mds. seed cotton.
Lint	15 mds.

	Rs.	a.	p.
Cost of planting	19	14	0
Weeding	66	5	0
Earthing	15	14	0
Manuring	10	7	0
Insect controlling	0	12	0
Harvesting cost	80	5	0
Sacks	14	15	0
Total ..	208	8	0

The price of 35 maunds of seed cotton at the present market rate of Rs. 10 per maund is Rs. 350 and so the net gain is Rs. 142 which works out at about Rs. 9 per bigha or Rs. 27 per acre.

This is a fairly good margin of profit for the first year of its trial in Amjhupi and so attempts are being made to extend the area under Dacca No. 2 cotton in that locality as far as practicable.

(6) *Mymensingh*.—In Mymensingh district, cotton was grown in the Kashimpur Farm of Maharaja of Mymensingh.

The land was very sandy and poor and so the cotton has not been grown successfully in the farm. Dacca No. 2 cotton was however grown to some extent but the Dacca No. 1 cotton was a total failure owing to the fungus disease. Sulphur dusting and Bordeaux mixture were given but the plants did not improve.

An outturn of about 15 seers of Dacca No. 1 seed cotton and 16 maunds 30 seers of Dacca No. 2 seed cotton has been obtained.

APPENDIX IV.

Serial No.	Name of type.	Number plants.	Yield.	Lint.	Ginning percentage.	Remarks.
			Sr. ch. tola.			
1	289 F. Bushy ..	23	1 1 1½	29·9	30·75	
2	289F. Tall ..	20	0 3 4	30·6	27·81	
3	289F. Bottom ..	17	1 0 4½	27·8	25·80	
4	289F. Middle ..	23	0 13 2½	28·5	28·67	
5	289F. Top ..	20	0 10 0	27·6	30·17	
6	289F. 5 Locked ..	21	0 15 0	28·2	25·50	
7	289F. 4 Locked ..	18	0 11 4	28·4	28·88	
8	289F. 3 Locked ..	20	1 1 4	28·6	28·08	
9	289F. Early ..	24	1 3 0	27·5	26·99	
10	289F. Medium ..	17	0 10 1½	25·9	29·06	
11	289F. Late ..	22	0 11 1	29·3	29·56	
12	289F. ..	22	1 1 0	29·4	28·07	
13	B.93. 16(3) ..	21	1 0 0	23·3	28·80	
14	Co. 2 Bushy ..	21	0 15 2	27·6	25·70	
15	Co. 2 Tall ..	22	0 13 1	26·1	33·84	
16	Co. 2 Bottom ..	23	1 0 2½	28·7	31·05	
17	Co. 2 Middle ..	23	0 15 2	29·3	28·98	
18	Co. 2 Top ..	21	0 13 4	34·9	26·76	
19	Co. 2 Early ..	22	0 15 1	29·2	27·97	
20	Co. 2 Medium ..	24	0 15 2	29·1	27·6	
21	Co. 2 Late ..	21	0 12 2	29·2	23·69	
22	B. 158. 16(3) ..	20	0 12 4	22·7	25·79	
23	Rangamati Co. 2 ..	22	1 3 3	29·0	27·27	
24	Dacca Co. 2 ..	21	1 6 0	30·1	27·72	
25	Co. 2 Cambodia ..	20	1 0 1	30·2	30·93	
26	B. Deshi ..	22	0 8 0	24·9	24·38	
27	A. E. Buri ..	27	0 13 0	29·8	24·01	
28	B. C. 402 ..	19	0 6 0	29·3	32·70	
29	A. 4F. (12) ..	21	2 8 1	29·2	32·74	
30	B. 110-14 ..	20	2 5 2	22·9	22·88	
31	A. Perbhani 1E 11·3(8) ..	21	0 9 0	34·3	25·26	

Serial No.	Name of type.		Number plants.	Yield.	Lint.	Ginning percentage.	Remarks.
				Sr. ch. tola.			
32	B. Molisoni	..	16	0 1 3	25·0	33·74	
33	A. 47F.	..	23	0 11 4	26·1	33·68	
34	B. 58. 42(4)	..	19	1 1 0	22·3	23·39	
35	A. 4F. (43)	..	21	1 0 2	29·5	27·79	
36	B.10 Rosia	..	18	0 13 4	22·4	28·95	
37	A. 285F. 2	..	22	0 13 1	34·8	31·50	
38	B. Canpur	..	15	0 6 1	27·0	29·21	
39	A. Gadak	..	23	..	32·8	29·11	
40	B. Sangunium	..	19	0 2 3	28·3	27·61	
41	K. T. 25	..	23	0 3 4	26·7	29·90	
42	B. Muslin	..	15	0 11 2	23·1	25·0	
43	A. B. P. 79	..	22	0 9 3	30·9	28·88	
44	N. V. 56(3)	..	2	0 1 0	30·2	29·95	
45	A. V. 513	..	20	0 15 2	27·7	29·54	
46	B. 57. 1 (4)	..	18	0 9 4½	24·1	23·83	
47	A. × A. 1129	..	22	0 8 0	29·5	28·63	
48	B. 85. 10 (13)	..	20	0 10 0	25·3	29·94	
49	C. 511	..	20	0 14 2	31·6	25·14	
50	B. Gaorani 3 B1	..	23	Nil	..	Nil	
51	A. × A. 129	..	23	0 9 1	32·4	29·34	
52	B. Banilla	..	20	0 13 2	23·2	27·4	
53	A. V. N. 4	..	21	0 6 0	32·4	29·45	
54	B. Molvi I	..	5	0 5 3	26·2	29·32	
55	G. 5. 79	..	23	0 13 3	28·8	27·56	
56	G. 5. 123	..	22	0 9 1	28·2	29·35	
57	B. Gaorani 6	..	13	0 0 4	26·6	27·12	
58	G. 5. 136	..	21	1 15 3	28·5	27·12	
59	B. Garo Hill	..	22	0 12 0	20·6	47·82	
60	G. 5. 30	..	16	1 1 2	28·1	30·35	
61	Bani 306	..	12	0 7 4	29·1	27·21	
62	G. 5. 696	..	22	1 0 1	28·2	32·73	
63	B. No. 438	..	14	0 4 1	27·0	31·48	
64	G. 5. 648	..	22	1 12 4	26·9	27·56	
65	B. Gaorani 113	..	4	0 1 1	24·8	27·33	
66	G. 5. 588	..	23	1 5 2	28·7	24·19	
67	Havari 3	..	21	0 13 1	23·4	29·59	
68	A. Mafore	..	14	0 10 3	35·0	28·02	
69	B. Uppam	..	4	0 2 4	29·8	27·09	
70	K. P. T. 1	..	13	0 3 0	29·9	27·56	
71	S. G. 23/8	..	17	Nil	Nil	Nil	
72	C. 520	..	22	0 10 3	25·8	39·01	

Serial No.	Name of type.	Number plants.	Yield.	Lint.	Ginning percentage.	Remarks.
			Sr. ch. tola.			
73	U. B. 24/4 ..	14	0 11 1	33·3	27·85	
74	Mallaing 3 ..	22	0 6 0	26·3	37·92	
75	B. P. 89 ..	21	0 9 1	27·2	29·28	
76	289 F.1 ..	19	1 0 4	26·6	31·73	
77	289F. D/2 ..	21	0 12 3	26·8	31·70	
78	Co. 2 D/3 ..	20	1 4 0	30·4	28·60	
79	E. B. 31×D/4 ..	10	0 1 4	30·6	23·45	
80	Perbhani IE D/5 ..	22	1 12 0	30·2	31·96	
81	Campella D/8 ..	15	0 12 3	32·1	28·8	
82	73-40c. Dharwur American D/7.	18	1 12 2	31·6	28·79	
83	Sea Island D/1 cotton ..	20	0 0 4	42·9	33·93	

APPENDIX V.

Result of cotton experiment of the Bankura Farm during the year 1940-41.

Experiment No. 1.

Nature of experiment—Spacing.

Nature of replications—6.

Date of replantation—15th June 1940.

Variety.	Group.	Distance plant to plant.	Number of plants in each group.	Area of each group including border sides.	Average yield. Each group.	Average yield. Per acre.	Remarks.
				S. ft.	Md. sr. ch.	Md. sr. ch.	
Dacca No. 1	A	5′×2′	12	126	0 0 5	2 18 12½	The distance 3′×2′ gives the highest yield per acre.
	B	3′×2′	12	98	0 0 6½	4 20 9	
	C	3′×3′	12	133	0 0 7¾	3 38 10½	
	D	4′×3′	12	152	0 0 7¾	3 18 13	
Dacca No. 2	A	2′×2′	12	84	0 0 12	9 29 3¼	The distance 2′×2′ gives the highest yield per acre.
	B	3′×2′	12	98	0 0 11	7 25 9¼	
	C	3′×3′	12	133	0 0 14½	7 11 10½	
	D	4′×3′	12	152	0 1 0	7 6 9	

Experiment No. 2.

Nature of experiment—Time of planting.

Nature of replications—10 times.

Date of plantation—

Variety.	Group.	Distance plant to plant.	Number of plants in each group.	Date of planting.	Area of each group including border sides.	Average yield. Each group.	Average yield. Per acre.	Remarks.
					Sq.	Md. sr. ch.	Md. sr. ch.	
Dacca No. 1	E	3′×2′	10	15-6-1940	84	0 0 4	3 9 10½	Planting in June gives the highest yield.
	F	3′×2′	10	15-7-1940	84	0 0 1	0 32 6½	
	G	3′×2′	10	15-8-1940	84	0 0 ½	0 16 3¼	Planting in September washed out after sowing.
	H	3′×2′	10	15-9-1940	84	Nil	Nil	
Dacca No. 2	E	2′×2′	10	15-6-1940	72	0 0 9	8 20 0	Planting in June gives the highest yield.
	F	2′×2′	10	15-7-1940	72	0 0 2½	1 14 ½	
	G	2′×2′	10	15-8-1940	72	0 0 1¼	0 27 ½	Planting in September washed out after sowing.
	H	2′×2′	10	15-9-1940	72	Nil	Nil	

APPENDIX VI.

APPENDIX VI.

Outturn list of fodder for 1940-41.

Name of plot.	No. of sub-plot.	Area.	Name of fodder.	Date of sowing.	Date of 1st cutting.	Outturn.	Date of 2nd cutting.	Outturn.	Date of 3rd cutting.	Outturn.	Total outturn.	Outturn per bigha.	Outturn per acre.	Remarks.
						Md. sr. ch.		Md. sr. ch.		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	
K.K.1	1	33×20	T. V. W. Luçern ..	15-5-40	15-9-40	2 25 0	5-1-41	0 2 0	..	..	2 27 0	58 14 0	176 0 0	
	2	33×20	An topas Compreson	15-5-40	15-9-40	3 30 0	19-12-40	0 21 0	..	..	4 11 0	93 11 0	282 0 0	
	3	33×20	African Velot ..	15-5-40	25-7-40	2 32 0	15-9-40	1 31 0	19-12-40	0 28 0	5 11 0	115 4 0	348 0 0	
	4	33×20	A. Pertusus ..	15-5-40	15-9-40	1 29 0	19-12-40	0 29 0	..	..	2 18 0	53 18 0	161 0 0	
	5	33×20	Johnson ..	15-5-40	25-7-40	5 8 0	15-9-40	1 16 0	19-12-40	0 9 0	6 33 0	148 36 0	450 0 0	
	6	33×20	Napier ..	15-5-40	25-7-40	6 37 0	15-9-40	3 30 0	5-1-41	2 20 0	13 7 0	287 18 0	869 0 0	
	7	33×20	Tangua ..	15-5-40	25-7-40	0 25 0	15-9-40	2 34 0	5-1-41	1 13 0	4 32 0	104 28 0	317 0 0	
	8	33×20	Marker's ..	15-5-40	25-7-40	4 17 0	15-9-40	2 29 0	5-1-41	1 16 0	8 22 0	186 22 0	573 0 0	
	9	33×20	African Panicum	15-5-40	25-7-40	1 22 0	15-9-40	1 15 0	5-1-41	1 0 0	3 37 0	85 25 0	259 0 0	
	10	33×20	Natal ..	15-5-40	25-7-40	1 27 0	15-9-40	1 20 0	5-1-41	1 10 0	4 17 0	96 22 0	292 0 0	
	11	33×20	Guinea ..	15-5-40	25-7-40	2 33 0	15-9-40	2 6 0	5-1-41	0 27 0	5 26 0	123 11 0	373 0 0	
	12	33×20	C. Pubescene ..	15-5-40	25-7-40	1 13 0	15-9-40	0 27 0	5-1-41	0 30 0	2 30 0	60 0 0	181 0 0	
	13	33×20	Water grass ..	15-5-40	25-7-40	1 33 0	15-9-40	2 20 0	5-1-41	0 36 0	5 9 0	114 0 0	345 0 0	
	14	33×20	Spear ..	15-5-40	25-7-40	2 4 0	15-9-40	2 19 0	5-1-41	0 30 0	5 13 0	116 7 0	351 0 0	
	15	33×20	A. Annulutus ..	15-5-40	15-5-40	0 35 0	15-9-40	2 15 0	5-1-41	0 25 0	3 35 0	84 22 0	255 0 0	
	16	33×20	Monticola ..	15-5-40	15-9-40	2 26 0	5-1-41	0 25 0	..	..	3 11 0	71 36 0	215 0 0	
	17	Small plot.	Grass seeds of Agricultural Horticultural Society, India.	18-6-40	..	..	..	..	..	..	..	..	..	
	18	Do.	Lucern seed ..	18-6-40	..	..	..	..	..	..	..	..	..	
	19	7k. 6ch.	All mixed of 16 types	15-5-40	3-7-40	16 22 0	13-9-40	23 5 0	5-1-41	2 3 0	41 30 0	113 3 0	342 0 0	

Name of plot.	No. of sub-plot.	Area.	Name of crop.	Date of sowing.	Date of flowering.	Date of harvesting.	Outturn.	Outturn. per bigha.	Outturn. per acre.	Remarks.
		B. k. ch.					Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	
N. P. A (*a*) ..	1	0 17 3	W. P. W. black ..	16-5-40	..	12-7-40	66 20 0	76 0 0	230 0 0	
M. M. Grove (*b*) ..	1	0 6 10	Bajra 4/3 ..	12-5-40	..	13-7-40	32 0 0	98 18 7	297 0 0	Fodder taken after collecting seeds.
	2	0 6 10	Bajra 11/10 ..	12-5-40	..	13-7-40	33 0 0	101 21 8	307 0 0	Ditto.
	3	0 6 10	Bajra A1/3 ..	12-5-40	..	13-7-40	31 0 0	95 15 6	288 0 0	Ditto.
M. M. Grove (*b*) ..	1	1 7 0	Brabhum cowpea	24-7-40	..	17-9-40	37 25 0	28 2 4	84 0 0	
M. M. Grove (*a*) ..	1	1 3 8	Krishnagar Juar ..	19-5-40	..	12-8-40	135 0 0	114 35 12	347 0 0	
Ditto	2	1 3 8	Rajshahi Juar ..	19-5-40	..	13-8-40	140 0 0	119 6 0	360 0 0	
M. S. E. Co. (N) ..	1	0 8 6	Bajra 11/10 ..	31-7-40	..	17-9-40	13 15 0	31 36 2	96 0 0	
M. S. E. Co. (S) ..	1	0 11 0	Early Joar ..	1-8-40	..	30-10-40	17 10 0	31 14 8	95 0 0	Fodder taken after collecting seeds.
K. K. II ..	1	1 13 0	Bajra 4/3 ..	22-8-40	..	8-11-40	51 0 0	30 36 6	94 0 0	
M. M. Grove (*b*)	1	0 8 8	Bajra 4/3 ..	30-9-40	17-11-40	10-1-41	4 4 0	9 25 14	39 0 0	
Ditto	2	0 8 8	Bajra 11/10 ..	30-9-40	17-11-40	10-1-41	3 22 0	8 14 2	25 0 0	
Ditto	3	0 8 8	Bajra A1/3 ..	30-9-40	29-11-40	10-1-41	1 6 0	2 28 4	9 0 0	
K. P. A /7-10) ..	1	1 11 0	Groit	7-10-40	26-11-40	17-1-41	7 0 0	4 20 10	14 0 0	Fodder taken after collecting seeds.
Ditto	2(*a*)	0 12 0	Barabati Kapoor ..	7-10-40	26-11-40	17-1-41	0 10 0	0 16 10	1 20 0	Ditto.
Ditto	2(*b*)	0 7 14	W. P. W. black ..	7-10-40	26-11-40	17-1-41	0 20 0	1 10 12	4 0 0	Ditto.
Ditto	2(*c*)	0 7 14	Brabhum ..	7-10-40	27-11-40	17-1-41	0 20 0	1 10 12	4 0 0	Ditto.
Ditto	3(*a*)	0 12 8	L. S. K. I. ..	7-10-40	26-11-40	17-1-41	1 0 0	1 24 0	5 0 0	Ditto.
Ditto	3(*b*)	0 12 8	L. S. K.II ..	7-10-40	26-11-40	17-1-41	1 0 0	1 24 0	5 0 0	Ditto.
Ditto	4(*a*)	..	Gram, P. 58 ..	28-10-40	7-1-41	17-1-41	..	..	..	
Ditto	4(*b*)	..	Gram, S. 4 ..	28-10-40	7-1-41	..	..	..	..	
Ditto	4(*c*)	..	Lentil, No 5. ..	28-10-40	15-12-40	..	..	..	--	
Ditto	4(*d*)	..	Punjab Rape ..	28-10-40	..	..	..	..	--	

Name of plot.	No. of sub-plot.	Area.	Name of fodder.	Date of sowing.	Date of flowering.	Outturn.	Date of harvesting.	Outturn.	Date of 3rd cutting.	Outturn.	Total outturn.	Outturn per bigha.	Outturn per acre.	Remarks.
		B. k. ch.				Md. sr. ch.		Md. sr. ch.		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	
M. M. Grove (*a*).	1	1 4 8	Burma Juar.	28-9-40	5-12-40	..	29-1-40	25 0 0	..	..	..	20 16 2	62 0 0	
	2	0 10 0	R. Juar ..	28-9-40	17-11-40	..	22-1-41	14 0 0	..	..	..	28 0 0	85 0 0	
	3	0 10 0	Krishnagar Juar.	28-9-40	26-11-40	..	22-1-41	13 0 0	..	..	..	26 0 0	78 0 0	
M. S. E. Co. (S).	1	0 11 0	Groit Cow-pea.	1-11-40	30-11-40	..	29-1-41	5 15 0	..	..	..	9 30 14	30 0 0	
M. S. E. Co. (N).	..	0 8 6	Burma Juar	30-9-40	5-12-40	..	23-1-41	9 0 0	..	..	..	22 6 2	67 0 0	

APPENDIX VII.

Linseed Scheme of the Imperial Council of Agricultural Research.

The Linseed Scheme financed by the Imperial Council of Agricultural Research was first started in Bengal in the year 1936-37, and work was simultaneously commenced both at Dacca Central Farm and the Berhampore Farm. It is a five-year scheme and this is the final year. The scheme was started with a view to find out high-yielding varieties of linseed suitable to the soil and climate of Bengal and satisfying the oil contents and iodine value.

Importance of linseed in Bengal.—Of the four major linseed-producing countries in the world, India stands third after Argentina and U.S.S.R., U.S.A. coming next. In India linseed is cultivated "not for the fibre (flax) but for the seed which yields an oil used mainly for industrial purposes, viz., in the manufacture of varnishes, and paints, etc., and in certain parts of India, for human consumption in edible preparations." Bengal, however, counts for only 5 per cent. of the Indian production, where linseed is cultivated mainly in Central Provinces, United Provinces, Bihar and Hyderabad in order of merit. But the production per acre is the greatest in Bengal. Bengal is thus quite suitable for the crop and yields about 500 lbs. per acre against 350 lbs. per acre in United Provinces, the next high-yielding province. There are great possibilities of the crop in Bengal if systematic effort is made to cultivate it on a large scale, and the scheme of the Imperial Council of Agricultural Research has given a momentum to that effort.

The results obtained during the last four years are published in the printed form and have shown certain fluctuations and variations so far as yield, iodine value and oil contents of the different varieties are concerned, but it must be asserted that much valuable information and important materials have been gathered about the modes and behaviour of this very important oil-seed crop in India, the popularity of which is gradually increasing in Bengal.

A proposal for extension of the scheme was also published in printed form together with the last four years' results. It is necessary to point out at the outset that at the present state of our knowledge, it is still premature to stress on any variety satisfactory from all standpoints, *e.g.*, oil, iodine and yield because the yields as well as oil and iodine contents vary from year to year. Unless the investigation is continued for further periods of say at least five years it would be very difficult to reach any definite conclusion regarding the selection of proper types. In view of the valuable results that have already been achieved and the increasing importance of the crop in commerce and industry, the scheme should be given at least another five years' trial in which time much more valuable information could be gathered. The scheme is being worked out now only in two places, viz., Dacca and Berhampore, but in a big province like Bengal, with so much of diversity in soil and climatic conditions, it is of great importance that multiplication work on selected varieties should be started in some more districts so that the requirements of the crop may be studied in thorough details. It should also be remembered that a more than 50 per cent. of the Bengal crop is grown in the three central districts, Nadia, Murshidabad and Pabna, and

only in one of them the crop is grown under departmental supervision. It is, therefore, proposed to study the environmental variations of the crop in these three district agricultural farms in small areas under the direct supervision of the Second Economic Botanist, Bengal.

This is the final year and the experimental cultivation of linseed financed by the Imperial Council of Agricultural Research is in progress both here at the Dacca Farm and at the Berhampore Farm. The results of the experiments at Berhampore Farm and also the results of analysis of this year by the Analytical Chemist are not yet concluded and so no final conclusion has yet been arrived at.

Staff.—The staff at present consists of two Fieldmen, one at Dacca Farm and the other at Berhampore Farm and a research scholar at the Dacca University for the chemical analysis of the results, all maintained by the Imperial Council of Agricultural Research.

Linseed Experiment, 1940-41.

This year the experiments are being conducted in the following lines in the Dacca Central Farm:—

Experiment No. 1.—Four varieties, viz., PH 6, PH 52, B 58 and P 17 selected from twenty varieties of 1938-39, sown at three different times, harvested in three different times in 5 replications, *i.e.*, 4 varieties × 3 sowings × 3 harvest × 5 replications = 180 samples in all. The seeds are with the Analytical Chemist for oil and iodine test. From this experiment we can get the effects of time on sowing and harvest. The followings are the yield obtained from the experiment No. 1 conducted at the Dacca Central Farm:—

Serial No. of plots.	Total plants harvested.	Actual yield in gramme.	Particulars.	Remarks.
12	18	59·5	PH 6—Variety ..	Plot size—(6′ × 4′ 6″).
51	29	64·5	13-10-1940—1st sowing date.	Total plants—108 were to grow.
92	34	114·0	24-2-1941—date of immature harvest.	About 25 per cent. of pods were immature.
125	26	65·0		
170	24	85·5		
13	16	45		
37	40	152	1-3-1941—date of normal harvest.	
102	58	119·3		
113	52	152·5		
163	10	15·5		

Serial No. of plots.	Total plants harvested.	Actual yield in gramme.	Particulars.	Remarks.
30	17	70	7-3-1941—date of over-ripen harvest.	25 per cent. to 30 per cent. of pods opened to burst.
65	25	70		
82	38	50		
143	20	54		
155	30	25		
36	108	109	28-10-1940—2nd sowing date.	
62	108	121 ·4		
106	86	138 ·0	27-2-1941—date of immature harvest.	
140	86	114 ·5		
176	77	139		
5	108	152	5-3-1941—date of normal harvest.	
57	100	152		
96	108	152		
109	100	164		
156	98	112		
20	108	140	13-3-1941—date of over-ripen harvest.	
42	94	120		
77	108	144		
122	108	154		
157	98	89		
3	108	109	4-11-1940—3rd sowing date.	
60	108	100	3-3-1941—date of immature harvest.	
88	82	40		
135	108	57		
160	108	36		

Serial No. of plots.	Total plants harvested.	Actual yield in gramme.	Particulars.	Remarks.
29	108	790	10-3-1941—date of normal harvest.	
44	108	90		
84	108	72		
129	108	105		
148	108	149		
21	108	118		
72	108	85		
99	108	88		
115	108	93		
180	100	106		
6	88	150	PH 52—variety ..	Plot size—(6′ 0″ × 4′ 6″).
39	98	168	13-10-1940—1st sowing date.	Total plants—108 were to grow.
90	55	133	7-2-1941—date of immature harvest.	About 25 per cent. of pods were immature.
134	86	116		
158	53	89		
22	77	120	17-2-1941—date of normal harvest.	
68	80	161		
78	97	155		
110	79	122		
178	30	84		
25	80	112·5		
49	86	139·4	27-2-1941—date of over-ripen harvest.	25 per cent. to 30 per cent. of pods opened to burst.
100	97	158		
131	65	128		
146	46	98·4		

Serial No. of plots.	Total plants harvested.	Actual yield in gramme.	Particulars.	Remarks.
34	108	160·5		
54	108	126	21-2-1941—date of immature harvest.	
74	108	105		
136	108	105		
162	105	127·5		
8	108	129		
64	108	176	26-2-1941—date of normal harvest.	
105	108	113		
126	108	145		
174	108	187		
15	108	106	5-3-1941—date of over-ripen harvest.	
47	108	125		
85	108	167		
120	108	120		
149	108	162		
17	108	83	26-2-1941—date of immature harvest.	
43	108	82		
103	108	110		
124	108	141·5		
152	108	77·0		
26	108	74		
71	108	89	5-3-1941—date of normal harvest.	
80	108	140		
141	108	155		
172	108	110		

Serial No. of plots.	Total plants harvested.	Actual yield in gramme.	Particulars.	Remarks.
4	108	97		
59	108	101	11-3-1941—date of over-ripen harvest.	
93	108	148		
118	108	107		
166	108	124		
33	106	176		
40	108	87	B 58—variety ..	Plot size—(6′ × 4′ 6″).
73	104	141		
119	100	166	13-10-1940—1st sowing date.	Total plants—108 were to grow.
175	97	108	3-2-1941—date of immature harvest.	About 25 per cent. of pods were immature.
18	80	111		
63	102	183	11-2-1941—date of normal harvest.	
94	97	125		
144	108	147		
168	108	194		
2	108	107·5		
58	108	175	21-2-1941—date of over-ripen harvest.	25 per cent. to 30 per cent. of pods opened to burst.
98	95	152		
121	108	150		
145	99	121		
19	108	72	28-10-1940—2nd sowing date.	
53	108	123	16-2-1941—date of immature harvest.	
101	108	129		
117	108	147·5		
165	108	155·0		

Serial No. of plots.	Total plants harvested.	Actual yield in gramme.	Particulars.	Remarks.
27	108	110		
67	108	170	22-2-1941—date of normal harvest.	
91	108	204		
127	108	111		
154	108	115		
11	108	62	3-3-1941—date of over ripen harvest.	
46	108	00·5		
79	108	145		
139	108	102·5		
169	108	109·5		
31	108	82		
48	108	75	4-11-1940—3rd sowing date.	
108	108	126	22-2-1941—date of immature harvest.	
130	108	175		
173	108	132		
10	108	87·5		
70	108	116	27-2-1941—date of normal harvest.	
87	108	143·5		
142	108	117·5		
159	108	112		
23	108	92		
50	108	127	7-3-1941—date of over-ripen harvest.	
76	108	122		
112	108	157		
150	108	120		

Serial No. of plots.	Total plants harvested.	Actual yield in gramme.	Particulars.	Remarks.
9	84	137	P 17—variety ..	Plot size—(6′ × 4′ 6″).
45	105	146		
104	104	118·5	13-10-1940—1st sowing date.	Total plants—108 were to grow.
128	108	159	20-2-1941—date of immature harvest.	About 25 per cent. pods were immature.
153	75	105		
32	108	153·2		
61	108	192·0	25-2-1941—date of normal harvest.	
86	108	186·0		
116	108	150·5		
167	108	164·0		
24	108	220		
56	108	159	3-3-1941—date of over-ripen harvest.	
83	108	187		
137	108	154		
179	108	131		
1	108	132		
38	108	143	28-10-1940—2nd sowing date.	
107	108	103		
111	108	127	25-2-1941—date of immature harvest.	
151	86	89		
16	108	115		
66	108	158	3-3-1941—date of normal harvest.	
89	108	96		
133	108	59		
164	108	75		

Serial No. of plots.	Total plants harvested.	Actual yield in gramme.	Particulars.	Remarks.
28	108	142		
55	108	161	8-3-1941—date of over-ripen harvest.	
81	108	117		
123	108	163		
177	108	126		
35	108	72	4-11-1940—3rd sowing date.	
41	108	113		
75	108	110	1-3-1941—date of immature harvest.	
132	108	135		
161	108	133		
7	108	110		
69	106	130	7-3-1941—date of normal harvest.	
95	108	112		
114	108	129		
147	108	107		
14	108	107	12-3-1941—date of over-ripen harvest.	
52	108	160		
97	108	110		
138	108	122		
171	108	97		

The following table showing the yield per unit plant in each case. These are the yield calculated from the above results :—

Serial No.	Variety.	1st sowing.			2nd sowing.			3rd sowing.			Remarks.
		Immature.	Normal.	Over-ripen.	Immature.	Normal.	Over-ripen.	Imature.	Normal.	Over-ripen.	
1	PH 6 ..	2·966	2·751	2·069	1·338	1·424	1·254	·665	·917	·921	PH 6 yielding an extraordinary result in the 1st sowing due to the luxuriant growth on account of small number of plants in the plots.
2	PH 52 ..	1·726	1·769	1·728	1·162	1·38	1·259	·914	1·052	1·069	
3	P 17 ..	1·398	1·566	1·576	1·146	·93	1·311	1·043	1·117	1·104	
4	B 58 ..	1·316	1·73	1·362	1·16	1·314	·962	1·093	1·068	1·14	

Weighments of 100 seeds are shown in the following table, sowing by sowing and variety by variety :—

1	PH 6 ..	·555	·55	·508	·552	·515	·514	·505	·51	·497	"Boldness, study."
2	PH 52 ..	·542	·6	·59	·579	·592	·575	·574	·57	·569	
3	P 17 ..	·567	·559	·583	·57	·577	·564	·558	·558	·548	
4	B 58 ..	·484	·539	·569	·508	·542	·55	·567	·532	·545	

Experiment No. 2.—The above four varieties plus B 17, the best yielder of 1937-38, are grown in 5 replications for yield test, *i.e.*, in 25 plots of 1 cattah each. This experiment should help us to find out the best yielder as regards field trial. The yields obtained at the Dacca Central Farm are appended below:—

Serial No. of plots.	Variety.	Actual yield in seers.	Remarks.
4	B 58	2·438	Yield calculated to a bigha (120′×120′) in seers.
7	B 58	2·713	The yield in the proceeding column were taken as medium in calculation.
16	B 58	3·000	
21	B 58	4·75	59·856
25	B 58	2·063	
6	PH 6	2·625	47·004
10	PH 6	2·313	
14	PH 6	1·25	
17	PH 6	1·813	
20	PH 6	3·75	
1	P 17	3·075	27·956
9	P 17	1·438	
13	P 17	1·163	
15	P 17	1·000	
23	P 17	·313	
3	B 17	1·313	23·004
8	B 17	1·438	
12	B 17	1·50	
18	B 17	·75	
22	B 17	·75	
2	PH 52	1·00	21·332
5	PH 52	·838	
11	PH 52	2·375	
19	PH 52	·875	
24	PH 52	·25	

Conclusion.—During the year under report B 58 giving the highest yield in the field trial. It is the earliest ripening variety. Proved inferior to chemical tests.

PH 6 is coming next as regards yield. It has a very late ripening tendency. But as regards oil and iodine it is the best.

PH 52 may be said to stand a medium from all deserving points.

P 17 is the worst among the four varieties.

N.B.—It is hardly possible to select a high-yielding variety during this short period as the yields are conflicting year after year.

Experiment No. 3.—Fifteen varieties, out of the twenty selected varieties of 1938-39, are sown broadcast in single individual plots for outturn.

The followings are the results arranged in order of merits:—

Serial No.	Variety.	Yield in seers.	Plot size.
1	B 28	1·5	(51′ × 6′).
2	B 61	1·313	
3	B 16	1·313	
4	B 66	1·25	
5	P 63	1·25	
6	P 31	1·25	
7	PH 90	1·213	
8	P 12	1·213	
9	B 26	1·063	
10	PH 79	1·0	
11	PH 75	1·0	
12	B 62	·938	
13	PH 76	·813	
14	PH 85	·563	
15	PH 71	·525	

Experiment No. 4.—Two hundred and seventy-eight general varieties in individual plots are grown: 100 plants' seeds weighment is recorded in each case. The results are recorded for a comparative test.

The results are shown below:—

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
190	PH 90	502	1
195	PH 97	442	2
5	P 9	435	3
148	PH 41	403	4
222	B 17	385	5
241	B 36	379	6
175	PH 73	371	7
178	PH 76	362	8
191	PH 93	357	9

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
227	B 22	341	10
242	B 37	340	11
211	B 6	336	12
238	B 30	333	13
276	B 71	333	14
204	C 5	324	15
277	B 72	318	16
176	PH 74	316	17
255	B 50	316	18
189	PH 89	309	19
228	B 23	289	20
254	B 49	287	21
97	P 104	282	22
194	PH 96	279	23
47	P 53	277	24
33	P 39	265	25
207	B 2	262	26
173	PH 70	261	27
206	B 1	256	28
160	PH 56	255	29
40	P 46	253	30
205	C 6	253	31
157	PH 52	252	32
251	B 46	252	33
192	PH 94	251	34
174	PH 71	244	35
129	PH 18	243	36
162	PH 58	242	37
48	P 54	241	38

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
239	B 34	240	39
115	P 123	237	40
210	B 5	237	41
24	P 30	234	42
81	P 87	233	43
275	B 70	232	44
23	P 29	230	45
256	B 51	228	47
209	B 4	227	48
220	B 15	222	49
219	B 14	221	50
112	P 120	218	51
208	B 3	218	52
213	B 8	218	53
56	P 62	217	54
117	PH 3	217	55
128	PH 17	217	56
156	PH 50	217	57
159	PH 55	217	58
261	B 56	216	59
127	PH 16	215	60
139	PH 29	215	61
161	PH 57	210	62
202	C 3	210	63
116	PH 2	208	64
180	PH 80	207	65
187	PH 87	207	66
259	B 54	203	67
34	P 40	200	68

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
63	P 69	200	69
130	PH 19	200	70
279	B 74	200	71
50	P 56	198	72
49	P 55	197	73
252	B 47	197	74
245	B 40	196	75
58	P 64	195	76
88	PH 88	195	77
40	B 35	195	78
118	PH 4	194	79
216	B 11	193	80
143	PH 33	192	81
231	B 26	192	82
99	P 106	190	83
107	P 114	190	84
111	P 118	190	85
260	B 55	190	86
272	B 67	190	87
144	PH 34	189	88
274	B 69	189	89
14	P 19	187	90
225	B 20	187	91
150	PH 44	185	92
158	PH 54	185	93
110	P 117	184	94
152	PH 46	184	95
214	B 9	184	96
215	B 10	183	97

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
32	P 38	182	98
64	P 70	182	99
12	P 17	179	100
39	P 45	179	101
226	B 21	179	102
212	B 7	178	103
244	B 39	177	104
153	PH 47	175	105
165	PH 61	175	106
113	P 121	174	107
171	PH 68	174	108
229	B 24	173	109
103	P 110	172	110
45	P 51	170	111
163	PH 59	168	112
36	P 42	167	113
90	P 96	167	114
263	B 58	167	115
223	B 18	165	116
70	P 76	164	117
105	P 112	164	118
135	PH 25	164	119
140	PH 30	164	120
203	C 4	164	121
230	B 25	163	122
96	P 103	162	123
265	B 60	162	124
235	B 30	160	125
123	PH 11	159	126

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
41	P 47	157	127
264	B 59	157	128
35	P 41	155	129
273	B 68	155	130
258	B 53	153	131
114	P 122	152	132
221	B 16	150	133
122	PH 10	149	134
270	B 65	149	135
147	PH 39	148	136
218	B 13	148	137
80	P 86	147	138
217	B 12	147	139
257	B 52	147	140
179	PH 79	145	141
43	P 49	144	142
8	P 12	142	143
46	P 52	142	144
66	P 72	142	145
98	P 105	142	146
169	PH 65	142	147
267	B 62	142	148
1	P 1	141	149
250	B 45	141	150
164	PH 60	140	151
88	P 94	140	152
177	PH 75	140	153
232	B 27	139	154
233	B 28	139	155

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
167	PH 63	138	156
75	P 81	137	157
248	B 43	137	158
268	B 63	137	159
166	PH 62	135	160
237	B 32	135	161
26	P 32	134	162
142	PH 32	134	163
234	B 29	134	164
247	B 42	133	165
44	P 50	132	166
185	PH 85	132	167
101	P 108	130	168
11	P 16	129	169
37	P 43	129	170
151	PH 45	129	171
82	P 88	128	172
138	PH 28	128	173
149	PH 42	127	174
236	B 31	126	175
266	B 61	125	176
104	P 111	124	177
197	PH 100	124	178
62	P 68	121	179
269	B 64	121	180
91	P 97	120	181
53	P 59	119	182
106	P 113	119	183
249	B 44	119	184

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
10	P 15	118	185
170	PH 66	118	186
278	B 73	116	187
224	B 19	115	188
182	PH 82	114	189
73	P 79	113	190
136	PH 26	113	191
52	P 58	112	192
20	P 26	111	193
137	PH 27	111	194
18	P 23	109	195
168	PH 64	109	196
154	PH 48	107	197
262	B 57	107	198
65	P 71	106	199
76	P 82	106	200
69	P 75	105	201
31	P 37	103	202
126	PH 15	103	203
9	P 13	102	204
30	P 36	102	205
132	PH 21	101	206
172	PH 69	101	207
4	P 8	100	208
79	P 85	100	209
92	P 99	100	210
131	PH 20	100	211
146	PH 37	100	212
201	PH 105	100	213

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
94	P 101	99	214
51	P 57	98	215
55	P 61	97	216
89	P 95	97	217
186	PH 86	97	218
271	B 66	97	219
15	P 20	96	220
200	PH 103	96	221
83	P 89	95	222
120	PH 8	95	223
121	PH 9	95	224
183	PH 83	94	225
67	P 73	93	226
145	PH 36	91	227
17	P 22	90	228
60	P 66	90	229
93	P 100	90	230
108	P 115	90	231
133	PH 22	88	232
95	P 102	84	233
57	P 63	82	234
119	PH 6	82	235
253	B 48	82	236
246	B 41	80	237
2	P 6	77	238
71	P 77	77	239
77	P 83	77	240
124	PH 12	77	241
54	P 60	76	242

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
68	P 74	75	243
72	P 78	72	244
181	PH 81	72	245
61	P 67	71	246
38	P 44	70	247
6	P 10	68	248
125	PH 13	67	249
42	P 48	64	250
84	P 90	64	251
102	P 109	64	252
141	PH 31	63	253
13	P 18	62	254
16	P 21	62	255
7	P 11	61	256
78	P 84	60	257
86	P 92	60	258
243	B 38	60	259
3	P 7	59	260
25	P 31	59	261
109	P 116	59	262
155	PH 49	58	263
196	PH 99	58	264
85	P 91	57	265
100	P 107	56	266
134	PH 23	55	267
184	PH 84	52	268
59	P 65	48	269
21	P 27	39	270
198	PH 101	39	271

Plot No.	Variety.	100 plants yield weight in gramme.	Order of preference as regards yield merit of 1940-41.
22	P 28	34	272
199	PH 102	34	273
74	P 80	32	274
27	P 33	27	275
28	P 34	25	276
29	P 35	23	277
19	P 24	17	278

Plot No. 87 was not sown for want of seeds.

Experiment No. 5.—Some 11 varieties, *e.g.*, four from the oil-seed Specialist, Central Provinces, Nagpur, three from the Director, Institute of Plant Industry, Indore, three from Assistant Fibre Expert, Bengal, and one from the Botanist, Agricultural Research Station, Dukrin, Sind, are received and grown in single plots in the same view that lies under experiment No. 4.

The following results are obtained:—

Serial No.	Variety.	Weight of 100 seeds in gramme.	Weight of 100 plants seeds in gramme.	Yield merits.
1	Linseed 55F.	·555	127	*II
2	Linseed 3255	·79	97	VI
3	Type 11	·74	79	X
4	Linseed E. B. 3	·795	94	VII
5	Linseed 43	·78	92	IX
6	Type 6	·835	100	V
7	Type 65	·86	72	XI
8	Linseed D. S.	·72	113	III
9	Of Hamburg	·5	112	IV
10	J. W. S.	·35	94	VIII
11	L. M.	·385	134	I

Experiment No. 6.—Sixteen varieties received from the Agricultural Chemist, Bengal, are multiplied in single plots and results are sending to the Chemist for his test.

Annual Report of the Agricultural Chemist, Bengal, for the year ending 31st March 1941.

Charge.—I was in charge of the office of the Agricultural Chemist, Bengal, Cigar-making Section, Dacca, and the Government Tobacco Farm, Rangpur, throughout the whole year excepting the period 30th May to 29th June 1940 when I was out on leave. Mr. S. M. Patwari, M.Sc., officiated in my place.

Staff.—The staff consisted of—

Mr. S. M. Patwari, M.Sc., Assistant Agricultural Chemist, Bengal.

Babu S. C. Rakshit, B.Sc., Assistant to the Agricultural Chemist, Bengal.

Babu N. K. Nandy, M.Sc., Assistant to the Agricultural Chemist, Bengal.

Babu S. B. Sen, B.Sc., Assistant to the Agricultural Chemist, Bengal.

Maulvi A. Quader, M.Sc., Dairy Chemist.

Maulvi Wahidul Islam, M.Sc., officiating as Assistant to the Agricultural Chemist, Bengal, in place of Mr. I. Chatterjee deputed for Imperial Council of Agricultural Research Work.

Babu S. C. Chakravarty, M.Sc., officiating as Physical Assistant in place of Mr. M. N. Chaklader deputed for Imperial Council of Agricultural Research Work.

Babu R. K. Basak, Fieldman.

Maulvi A. Shahid, Fieldman.

More Irrigation Scheme Survey (temporary).

Maulvi A. Karim, M.Sc., Chemist.

Babu J. C. De, L.Ag., Agricultural Officer.

Soil Survey Scheme (temporary).

Babu Sukumar Sen Gupta, B.Sc. (Agri.), Field Assistant.

The appointment of the remaining staff of the scheme has not yet been made.

Staff for the Schemes financed by the Imperial Council of Agricultural Research.

(*i*) *Animal Nutrition Scheme, Bengal*—

Mr. I. Chatterjee, M.Sc., Physiological Chemist.

Maulvi A. Hye, M.Sc., Assistant Physiological Chemist.

Babu B. L. Shome, B.Sc., Junior Assistant.

Maulvi M. Rahman, B.Sc., Junior Assistant.

Maulvi Sayed Ali, Byre Overseer.

Maulvi A. Talukder, Byre Overseer.

(ii) *Scheme for the Study of Soil Problems in Bengal*—

Mr. M. N. Chaklader, M.Sc., Physical Assistant.

(iii) *Sugarcane Testing Station, Dacca Farm*—

Babu S. N. Bhattacherjee, Field Assistant.

Leave.—I was out on leave from 30th May to 29th June 1940. The two Assistants Babu S. B. Sen and Maulvi A. Quader were out on leave for 13 days and 5 days, respectively, during the year.

Tour.—I was on tour for 74 days for inspection of the various Government Farms, Union Board Farms and Demonstration Centres.

The Assistant Agricultural Chemist was on tour for 35 days mostly in connection with work on soils.

The Assistants were on tour for 109 days mainly in connection with work on soil, sugarcane and exhibition.

The staff of the More Irrigation Scheme was on tour for 109 days in connection with the survey work.

Sugarcane.—*Weather and General conditions.*—The season was on the whole not a favourable one. Total rainfall was 60·76 inches as against 69·20 inches normal. The distribution was uneven. Showers in April were insufficient. In May and June they were sufficient and well distributed which helped the growth of canes but scanty rain in July put a check to the growth. Though in August and September the rains were sufficient and helpful the deficient rainfall in October and absence of rain afterwards seriously affected further growth with the result that the yield was somewhat poor.

The season was marked by heavy insect pests and outbreak of deadly diseases like redrot, wilt, etc., in many parts of Bengal. Heavy damage by redrot and wilt was reported from the districts of Dinajpur, Birbhum and Murshidabad where they broke out in an epidemic form.

Distribution of cuttings of improved varieties of canes.—As usual the demand for cuttings was heavy. A little more than one lakh cuttings was supplied from the Dacca Farm while the supply from the District Farms went above two lakhs. The cuttings supplied consisted mainly of the varieties Co. 213, Co. 527, Co. 508, Co. 331, Co. 421, Co. 281 and Co. 371.

Sampling in sugarcane work.—There are various methods in vogue at present for the sampling of sugarcane for analytical work, viz.—

(i) *On the basis of rows, i.e.*, a random row or a section of a row of stools of canes is taken;

(ii) *On the basis of clumps, i.e.*, a random sample of one or more normal clumps of cane is taken; and

(iii) *On the basis of canes, i.e.*, a random sample of 5 or more canes is taken.

Of these the last two methods are commonly used for sampling for the analysis of juice in sugarcane. It is desirable that a standard method of sampling should be worked out and used at all experimental stations as recommended by the Sugar Committee of the Imperial

Council of Agricultural Research. Work was undertaken to study the comparative efficiency of the last two methods with a view to find out the least number of clumps or canes that should go to make a sample. With clumps the samples consisted of 1, 3, 6 and 15 clumps each and with canes they consisted of 1, 15, 30 and 75 canes each. They were taken at random in each case from a 1/40th acre plot of Co. 508; after taking the samples the rest of the canes went to form the pan or the bulk sample. There were 9 replicates of each sample. Sucrose, brix and purity were determined in each of these samples and compared with one another. The experimental data (Appendix I) were put to statistical analysis. No significant difference between any of the methods was found.

This shows that either of these methods may be used for sampling and there is no special advantage in taking a larger sample than 1 normal clump or 5 canes as long as the samples are taken on a random basis.

Variety trial of sugarcane.—Altogether 24 varieties consisting 5 early and 7 mid-season and 12 late types of cane were tested at the Dacca Farm. The analytical results are given in the Appendices II-A–C and those of the District Farms in the Appendix III. The Dacca Farm results have been statistically examined and summarised in the Tables I-A—C.

In the District Farms the yield of canes shows wide variations. In almost all these farms Co. 421 and Co. 331 have given more outturn of stripped canes than the standard Co. 213. Between these two varieties, Co. 421 has consistently done better than Co. 331. Rajshahi Farm has topped the list as regards yield of stripped canes followed by Rangpur, Dinajpur and Chinsurah. At Rajshahi all the varieties—Co. 421, Co. 331, Co. 213, Co. 386 and Co. 407—have given more than 1,000 maunds of stripped cane per acre, Co. 386 topping the list with 1,218 maunds of cane per acre.

TABLE I-A.

SUGARCANE DACCA, FARM (EARLY BLOCK), 1940-41.

Yield in maunds of stripped canes per plot (1/40th acre).

	Co. 518.	Co. 381.	Co. 281.	D. S. 35.	Co. 508.	Total.
	10·25	8·63	12·40	8·50	11·28	51·06
	10·83	9·75	10·80	8·50	10·55	50·43
	9·83	10·13	12·00	8·30	9·63	49·89
	12·45	9·13	15·93	9·35	11·75	58·61
	12·05	8·98	12·28	8·63	12·78	54·72
Total	55·41	46·62	63·41	43·28	55·99	264·71 =Grand total.

Summary.

	Co. 518.	Co. 381.	Co. 281.	D. S. 35.	Co. 508.	Average.	S. E.	C. D.	
Average yields (maunds) per plot ..	11·08	9·32	12·68	8·66	11·20	10·59	0·459	1·376	Mahalanabis Test satisfied at 1 per cent. level.
Maunds per acre	443·2	372·8	507·2	346·4	448·0	423·6	18·36	55·04	
Per cent.	104·63	88·01	119·74	81·78	105·76	100·00	4·33	12·99	

Co. 281 is best, next come Cos. 508 and 518, then come Co. 381 and D. S. 35.

TABLE I-B.

SUGARCANE, DACCA FARM (MID-SEASON BLOCK), 1940-41.

Yield in maunds of stripped cane per plot (1/40th acre).

	Co. 326.	Co. 407.	Co. 313.	Co. 371.	Co. 529.	Co. 213.	Co. 511.	Total.
	16·10	14·03	16·23	16·83	14·70	15·78	16·05	109·72
	18·50	16·05	15·60	19·90	13·58	17·13	15·70	116·46
	19·88	15·10	16·13	18·55	15·88	18·48	15·38	119·40
	18·75	13·65	18·38	19·63	15·80	15·80	18·38	120·39
	19·00	16·23	20·00	20·68	16·45	18·60	14·60	125·56
Total	92·23	75·06	86·34	95·59	76·41	85·79	80·11	591·53 = Grand total.

Summary.

	Co. 326.	Co. 407.	Co. 313.	Co. 371.	Co. 529.	Co. 213.	Co. 511.	Average.	S. E.	C. D.	
Average yield (maunds) per plot.	18·45	15·01	17·27	19·12	15·28	17·16	16·02	16·90	0·581	1·696	Mahalanabis × test satisfied at 1 per cent. level.
Maunds per acre ..	738·0	600·4	690·8	784·8	611·2	686·4	640·8	676·0	23·24	67·84	
Per cent. ..	109·16	88·81	102·18	113·13	90·41	101·53	94·79	100·00	3·437	10·034	

Co. 371 heavest yielder but is not significantly superior to Co. 326.

TABLE I-C.

SUGARCANE, DACCA FARM (LATE BLOCK), 1940-41.

Yield in maunds of stripped cane per plot (1/40th acre).

	Co. 331.	Co. 443.	Co. 527.	Co. 386.	Co. 421.	Co. 441.	Co. 349.	Co. 523.	Co. 444.	Hm 607.	Co. 533.	Co. 419.	Total.
	16·80	8·90	20·68	11·98	20·28	16·58	15·43	22·48	16·50	13·20	15·15	11·43	189·41
	17·03	15·25	20·68	17·88	21·35	16·18	19·18	21·53	18·28	18·73	19·35	14·15	219·59
	17·88	14·43	22·50	14·20	21·58	21·13	17·25	21·13	13·03	17·13	16·63	17·83	214·72
	19·50	13·63	22·40	16·50	20·85	18·32	18·63	23·53	16·30	16·38	20·13	14·90	221·07
	14·83	15·00	20·80	16·83	21·50	18·78	20·88	22·05	16·55	16·13	19·45	18·85	221·65
Total	86·04	67·21	107·06	77·39	105·56	90·99	91·37	110·72	80·66	81·57	90·71	77·16	1,066·44 = Grand total.

Summary.

	Co. 331.	Co. 443.	Co. 527.	Co. 386.	Co. 421.	Co. 441.	Co. 349.	Co. 423.	Co. 444.	Hm. 607.	Co. 533.	Co. 419.	Average.	S. E.	C. D.	
Average yield (maunds) per plot.	17·21	13·44	21·41	15·48	21·11	18·20	18·27	22·14	16·13	16·31	18·14	15·43	17·77	1·076	3·010	Mahalanabis × test satisfied at 1 per cent. level.
Maunds per acre.	688·4	537·6	856·4	619·2	844·4	728·0	730·8	885·6	645·2	652·4	725·6	617·2	710·8	43·04	120·40	
Per cent. ..	96·85	75·63	120·48	87·11	118·80	102·42	102·81	124·59	90·77	91·78	102·08	86·83	100·00	6·055	16·939	

Cos. 523, 527 and 421 are the heavy yielders, Co. 443 yields the least.

Tobacco.—The season for tobacco was on the whole not an unfavourable one though it was marked by an almost total lack of rainfall during the growing period. There was little difficulty in raising seedlings timely but want of sufficient rains at the time of transplantation gave a certain amount of trouble. Drought took a heavy toll and gap-fillings had to be done extensively. With irrigation the crop made a good growth. Leaf curl was noticed in abundance during the early period of growth. Hailstorm did a certain amount of damage towards the later period of harvest.

At the Dacca Farm 36 types of tobacco were raised as usual for pure-line culture. The fire curing of Ohio leaves was done as before.

At the Government Tobacco Farm, Rangpur, mention was made of certain defects in cultural operations with regard to the cigarette tobacco. They related to the rate of application of nitrogen and phosphate in the form of manures. Nitrogen used to predominate over phosphate whereas with cigarette tobacco the reverse should have been the case. With a view to devise a suitable technique for the raising of cigarette tobacco 4 manurial treatments having widely different NP ratios were tried and they were flue cured separately.

It is proposed to send the samples of the flue cured leaves with the different treatments to the market for opinion and valuation.

Cigar-making Section, Dacca Farm.—Four cigar rollers worked throughout the year. About 45 maunds of leaves were turned into hand-made cigars of various brands. They continued to be as popular as before. The sale proceeds of cigars amounted to Rs. 1,200-12-3 as against Rs. 1,517-0-9 last year.

Seed distribution.—The total distribution of improved seeds of tobacco from the various farms amounted to 2,020 tolas.

Work on soil.—*Effect of lime on the native potash of the Dacca Red Soil.*—Working on the influence of lime and bone on the native potash of the Dacca Red Soil it has been found that the potash liberated from the soil by the application of lime is fixed after a course of time. This fixation may be due to one of the two causes (Soil Science, April 1938, Vol. 45, No. 4, p. 263)—

(1) the liberated potash may form an insoluble compound which cannot be extracted with salt solutions or dilute acids.

(2) The liberated potash may re-enter the soil complex so that it can be extracted with salt solutions or dilute acids.

To determine the nature of fixation the following experiment was done:—

25 gms. of soil mixed with lime and bone were shaken up with 100 cc. water for 24 hours. The whole was then transferred to a filter paper and washed with water (total 1,000 cc.) to determine the water soluble potash. The exchangeable potash remaining in the complex was then determined by leaching the washed soil with acetic acid $\frac{N}{2}$ (William's method). The water soluble potash and the exchangeable

potash in the soil mixed with lime and bone and kept saturated with water for a course of time were similarly determined. The experimental results are tabulated below—

TABLE II.

K_2O (in mgm.) per 100 gms. soil.

Treatment.		Water soluble potash.		Potash in the soil complex (extracted with acetic acid).	
Lime ..	Freshly extracted	3·73	Average: 3·96	5·12	Average: 5·21
Ditto ..		4·19		5·31	
Lime+Bone ..		5·57	Average: 5·22	6·77	Average: 6·31
Ditto ..		5·31		6·64	
Ditto ..		5·08		5·48	
Ditto ..		4·90		6·17	
Ditto ..		4·95		6·77	
Ditto ..		5·53		6·06	
Lime+H_2O ..	Aged, *i.e.*, mixed and kept for some time and then extraction done.	3·07	Average: 3·30	6·28	Average: 6·77
Ditto		3·54		7·27	
Lime+Bone+H_2O		4·61	Average: 4·15	8·03	Average: 8·07
Ditto ..		4·73		8·42	
Ditto ..		4·48		7·68	
Ditto ..		4·26		7·76	
Ditto ..		3·21		8·13	
Ditto ..		3·63		8·42	

It will be seen that in the fresh samples the water soluble potash liberated on treatment with lime and lime + bone are always more than the corresponding potash liberated from the aged samples. This indicates that a portion of the water soluble potash has been fixed and gone out of the solution when it remains in contact with the soil. The acid soluble potash are more in the case of the aged samples indicating that the potash gone out of the water solution has re-entered the soil complex and is extracted with acid.

Thus the fixation of potash is due to its re-entrance into the soil complex. It has an economic significance in that it helps in the conservation of potash in the soil and does not allow it to be leached out easily.

More Irrigation Scheme : Soil Survey.—This work was taken up at the instance of the Public Works Department (Irrigation). The main objects of the survey were—

(*i*) to determine the areas that were suitable for cultivating crops in the areas commanded by the scheme;

(*ii*) to classify the areas that were cultivable in the irrigable area into 1st class, 2nd class, 3rd class, etc., according to the nature and number of crops that could be grown there; and

(*iii*) to ascertain whether there were any salts in the sub-soil in the area to be irrigated which might be brought to the surface by irrigation so as to cause deterioration of the crop-bearing stratum.

The field work was carried out conjointly by an Agricultural Officer and a Chemist. It was not possible to completely finish the survey work during the year under report. Only the first two items were done but the third remained yet to be done.

For simplicity of work the irrigable area was divided into 17 small blocks having well defined boundaries such as rivers, "*kandars*" (streamlets) or provincial roads. The survey consisted in making cross-country journeys through the blocks collecting information about the crops generally grown, studying the nature of the soil by making shallow and deep pits in a number of places and collecting soil samples for ultimate examination in the laboratory for salts, etc.

Regarding item (*i*) lands having 4 feet or more of good soil have been classed as *cultivable* while lands with stone stratum, gravels or morrums occurring profusely nearer the surface than 4 feet which make cultivation difficult or impossible, have been classed as *uncultivable*.

Regarding item (*ii*) lands possessing good texture, free drainage facilities and having possibilities of growing besides paddy crops like cereals, pulses, oil bearing crops, sugarcane, tobacco, potatoes, vegetables, etc., have been classed as *first class*. Lowland areas at the base of terraces now growing paddy and having possibilities of its being followed by one *rabi* crop with the help of irrigation have been classed as *second class*. Areas mostly "*danga*" (high) lands having clay or sandy soil and containing a low percentage of "*morrums*" and "*ghutings*" which are at present usually left fallow but which seem to have possibilities of growing a few special crops such as joar, maize, etc., in the *kharif* season with application of manures have been classed as *third class*. Besides the above another class under the head "*unavailable to cultivation*" has been included to represent the areas under "*bustees*", tanks, roads, kandars, rivers, etc.

During the course of the survey 54 shallow and 13 deep pits were dug in different places and 60 samples of soil were collected for examination in the laboratory.

The total area surveyed was approximately 312 square miles. This area lay mostly to the west of the Shahibganj loop line, East Indian Railway, with 3 spurs towards the east near Nalhati, Sainthia and Labhpur.

Broadly speaking, the irrigable area consists of rolling uplands separated by valleys which form the drainage channels and the beds of "*kandars*" or streamlets. These uplands are generally capped at the top by light soils and underneath them occur heavy soils consisting mostly of stiff clay. Down the slopes the clay soils appear nearer the surface or on the surface. The slopes make excellent transplanted paddy lands after being terraced. In the valleys, light soils occur in the spill areas of the "*kandars*" and rivers. These lands are highly prized as *rabi* crops can be easily raised there. Hard sands several feet deep containing morrums, gravels and stones occur in places near "*bustee*" lands. High lands where soil denudation has proceeded to a considerable extent leaving concretionary materials several inches thick on the surface can also be seen in the irrigable area. These lands are hardly amenable to cultivation but fortunately such lands are few.

Regarding classification, it was found that the various classes of soils lay scattered in small patches all over the areas and hence it was hardly possible to show them in maps. An idea of the approximate areas under each class of soils was all that was possible. As a result

of the survey it has been found that on a rough approximation the irrigable area consists of—

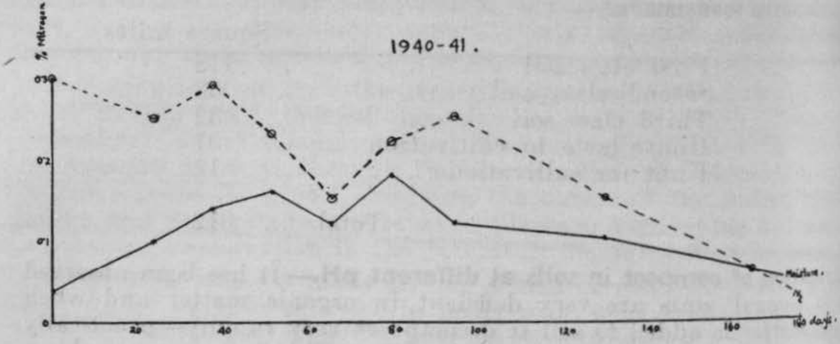
	Square miles.
First class soil	118
Second class soil	53
Third class soil	32
Unavailable to cultivation ...	97
Unfit for cultivation	12
Total ...	312

Oxidation of compost in soils at different pH.—It has been observed that in Bengal soils are very deficient in organic matter and when organic matter is added to soil it decomposes very rapidly—practically no effect is left behind (*see* Appendix IV). This important problem was taken up for investigation in order to study the course of oxidation process and to find out if possible the optimum conditions to regulate the process of oxidation so that the maximum benefit can be derived out of it. In order to study this problem the experiment was designed in the following way in the laboratory. Soil (900 gms.) was kept in 1,000 cc. pyrex beakers in duplicate at different pH, viz., 6·14, 6·43 and 6·7 by addition of 0·5 per cent., 0·1 per cent. and 0·15 per cent. lime, respectively. Compost at the rate of 10 per cent. by weight of soil was added to each beaker. Two control experiments were also set up—one soil alone, and the other soil plus 10 per cent. compost. Initially the moisture was kept at 20 per cent. level. At every week's interval a measured volume (50 cc.) of water was added to each beaker. When a soil diminished due to sampling a lesser quantity of water was added. Then at intervals of 24 days, moisture, pH, nitrogen and carbon were estimated. The analytical data are given in the Appendix V. From the data available it is, at present, very difficult to say anything definite but it is of interest to note that with the fluctuations of moisture in the soil the nitrogen content of the soil varies as is evident from Graph A. Further work under more restricted conditions is in progress.

Work on Kasch soil in Cox's Bazar subdivision, Chittagong.—This is a continuation of last year's work. As in the previous year a large quantity of Kasch soil from the affected area in the Badarkhali Co-operative Colony was brought to Dacca. Due to the natural causes operating in the field for a year, the texture of the soil seemed to have improved. Analytical results of the chemical examination of the HCL extract of the soil are given below—

	Per cent.
Loss on ignition	11·10
Acid insoluble residue	65·29
Total P_2O_5	0·099
Total K_2O	1·91
Total CaO	0·37
Silica (soluble)	0·06
Total Fe_2O_3	5·62
Total Al_2O_3	1[illegible]·26
Total Mn_3O_4	Trace
Total MgO	1·65
Nitrogen	0·23
Acidity (pH)	3·39

N.B.—Ferrous iron estimated as Fe_2O_3 in aqueous solution (1 : 100) in Kasch soil (1940-41) is 0·080 per cent.



To rectify the acidity the Kasch soil was treated with lime at 250 maunds per acre on the 25th June 1940. In the light of the previous year's experiments (pot culture) regarding the chemical means of amelioration, certain treatments were modified while others rejected. In all 10 treatments with 5 replications were tried and they were as follows:—

(1) Control.

(2) Lime alone at 1 per cent. rate (72 gms. per pot).

(3) Lime as above + Bone (5 gms. per pot).

(4) Lime as above + cowdung (50 gms. per pot).

(5) Lime as above + Nicifos (3 gms. per pot).

(6) Lime as above + $CuSO_4$ (5 gms. per pot).

(7) Lime as above + Bone as in (3) + $CuSO_4$ (as above).

(8) Lime as above + cowdung as in (4) + $CuSO_4$ (as above).

(9) Lime as above + Nicifos as in (5) + $CuSO_4$ (5 gms. per pot).

(10) $CuSO_4$ alone (as above).

Each pot contained about 16 lbs. of soil.

Paddy tried was a Badarkhali locally known as Ladum.

Seedlings, raised elsewhere in good soil, were transplanted on the 5th August 1940. They grew in all the treated pots but after some time a slight difference was observed in their behaviour. The performance

of the plants approximately one month after transplantation was as follows:—

Treatments.	No. of pots in which plants survived.	Condition of growth of the plants.	Remarks: About one month after transplantation.
1. Control (Soil alone).	Nil	All died ..	At the beginning grew for some time.
2. Lime ..	5	Luxuriant ..	Positive response due to lime.
3. Lime+Bone ..	5	Ditto ..	Bone has not much to recommend over lime.
4. Lime+Cowdung	5	Better than above, *i.e.*, (3).	
5. Lime+Nicifos	5	As in (3) and (4)	
6. Lime+$CuSO_4$	5	Worse than any of (3), (4), (5).	Copper seemed to have a depressive influence on the plant growth.
7. Lime+Bone+ $CuSO_4$.	5	Very good ..	Better than lime alone and much better than 3, 4, 5, 6.
8. Lime+Cowdung +$CuSO_4$.	5	As above (7)	Ditto.
9. Lime+Nicifos+ $CuSO_4$.	5	As above (8)	Ditto.
10. $CuSO_4$ (without lime).	1	Poor ..	Cu alone has nothing to its credit.

When the plants grew up, an inch of water was allowed to stand in the pots. Only one plant was kept in each pot.

It was observed that the supernatant liquid in the treatment (No. 1) was clear and there were no bubbles showing the absence of fermentation. The supernatant liquid in the last treatment (*i.e.*, No. 10), with copper sulphate alone was observed to be similar to No. 1. In the liquid in all the other treatments bubbles were observed indicating acting fermentation.

The average growth of the plants except the first and the last groups was satisfactory.

Two photographic exposures of all the pots were taken—one before the flowering and another when the grains were almost mature.

Flowering of the plants lasted from 12th to 21st October 1940. The plants flowered at random irrespective of the treatments showing thereby that no particular treatment had any effect on the period of flowering.

Paddy was harvested on the 27th November 1940.

The weight of the grains and straw of individual plants were taken and the results are given in the Appendix VI, and summarised in Table III. The table clearly shows that the addition of copper significantly increases the yield of the former but not of the latter. The

primary necessity of the soil is lime. Phosphatic manures make slight increase over lime. Copper in the form of copper sulphate makes a significant increase showing that somehow or other it helps to check the baneful effect of Kasch. The chemical analysis of straw in a tabular form is given in the Appendix VII. It shows that with copper sulphate less iron occurs in the straw than without it.

Pot-culture work.—*Paddy Nutrition.*—It is a continuation of the paddy nutrition work of the year (1938-39) with certain modifications as regards the application of bone. In the year (1938-39) bone was applied at the rate of 6 maunds, 12 maunds and 18 maunds per acre of soil. The application of bone at the rate of 6 maunds per acre was then found to be the most economic. This year bone was applied at a reduced rate of 2 maunds, 4 maunds and 6 maunds per acre to see if a lesser dose than 6 maunds was more economic.

The experiment was laid out with lime and bone singly and in combination in varying doses. Five lime treatments were cross-treated with four bone treatments. Thus in all there were 20 treatments with five replications.

The doses of lime varied from 0 to 72 maunds per acre and bone from 0 to 6 maunds per acre. The actual doses were for lime 0, 6, 24, 48 and 72 maunds per acre and for bone 0, 2, 4 and 6 maunds per acre.

TABLE III.

Average yield of Grain per Plant in gms.

	Lime.	Lime+ Bone.	Lime+ Cowdung.	Lime+ Nicifos.	Average.
No Copper	29·80	30·08	26·84	33·00	29·98
Copper	33·56	39·06	40·94	42·32	38·97
Average	31·68	34·57	33·89	37·66	..

		C. D. at 5 per cent. level.
S. E. for all treatments	4·416	12·70
S. E. for lime treatments ..	3·122	8·99
S. E. for Copper treatments ..	2·208	6·36

Addition of copper to the treatments significantly increases the yield.

Average yield of Straw per Plant.

	Lime.	Lime+ Bone.	Lime+ Cowdung.	Lime+ Nicifos.	Average.
No copper	54·6	53·4	47·8	51·0	51·70
Copper	41·8	61·4	59·0	66·8	57·25
Average	48·20	57·40	53·40	58·90	..

		C. D. at 5 per cent. level.
S. E. for all treatments	7·208	20·751
S. E. for Lime treatments ..	5·097	14·674
S. E. for Copper treatments ..	3·604	10·376

Treatments are not significantly different.

32 lbs. of soil mixed with lime and bone according to the scheme were taken in pots and one paddy seedling (Indrasail) put in each pot. After transplantation sufficient water was added so that water remained standing in the pots. During rains the pots were kept under cover. As the soil was very poor in nitrogen a general dressing of ammonium sulphate at the rate of 1 maund of nitrogen per acre was given.

The actual yields per pot for both grain and straw are given in the Appendix VIII. The results are summarised in the Tables IV A-B and represented in the Graphs B and C.

The first dose of bone, *i.e.*, 2 maunds per acre, seems to be the most economic dose for paddy.

Mitscherlich Test (Pot-culture).—The Imperial Council of Agricultural Research suggested the trial of certain newer methods of determining soil fertility, *e.g.*, *Mitscherlich Test,* with a view, if possible, to correlate sugarcane yields with the nature and the amount of nutrients and to devise a rational basis of manuring. The method was given a trial in the pot-culture using paddy as the indicator crop.

Two sets of pot-culture experiments were done simultaneously. The first experiment consisted of 20 pots having 4 treatments with 5 replications. The treatments were as follows:—

(*i*) Complete manure (NPK),

(*ii*) Complete manure minus Nitrogen (N_0PK),

(*iii*) Complete manure minus Phosphate (NP_0K), and

(*iv*) Complete manure minus Potash (NPK_0).

The second experiment consisted of 28 pots having 7 treatments with 4 replications. The treatments were as follows:—

(*i*) $N_1 P_1 K_1$ (*ii*) $N_2 P_1 K_1$ (*iii*) $N_3 P_1 K_1$ (*iv*) $N_1 P_2 K_1$ (*v*) $N_1 P_3 K_1$ (*vi*) $N_1 P_1 K_2$ (*vii*) $N_1 P_1 K_3$ where N, P and K represent Nitrogen, Phosphate and Potash respectively and 1, 2 and 3 represent the doses of manures.

The treatments and the actual doses employed in the two experiments are set forth in the Tables V and VI.

Soil was taken from an unmanured plot in the Institute area. 50 samples from 50 different places were taken up to a depth of 9″. They were air-dried and thoroughly mixed up after passing through 2mm. sieve.

Pots were made of galvanised tin having similar size as Mitscherlich. Each pot was filled up with 6 lbs. of soil plus 12 lbs. of thoroughly washed quartz sand. Nutrients were added in the form of solution. Pots were placed in two rows over 4 trolleys on a randomisation basis. The trolleys were covered with the wire-netting for protection of the crop against damage by rats and birds.

TABLE IV-A.

Pot-culture: Dacca Farm (1940-41).

Effect of Lime and Bone on Paddy (Indrasail).

Average yield of paddy and straw in grms.

Average of 5 pots each.

Paddy (Grains).

	L_0	L_1.	L_2.	L_3.	L_4.	Average of bone.	S. E. of bone.	C. D. for bone.
B_0.	16·6	16·4	29·2	25·8	27·4	23·08	..	..
B_1	50·4	56·0	55·8	44·2	41·4	49·56	2·447	6·894
B_2	62·0	64·2	55·8	48·4	31·2	52·32	..	..
B_3	61·4	58·4	60·8	46·4	40·2	53·44	..	..
Average of lime	47·60	48·75	50·40	41·20	35·05	..	..	..
S. E. of lime	..	..	2·736	..	..	..	..	..
C. D. for lime	..	..	7·709	..	..	..	..	..

N. B.—Yield of two treatments have been calculated according to Yate's "missing plot technique".

Analysis of Variance.

	D. F.	Sum of squares.	Mean square.	Ratio.	S. E.
Blocks	4	605·10	151·275	2·020	..
Lime	4	3,252·50	813·125	10·859*	..
Bone	3	15,636·40	5,212·133	69·609*	..
Lime + Bone	12	3,757·10	313·092	4·181*	..
Error	74	5,540·90	74·877	..	..
Total	97	28,792·00	..	..	..

*Significant at 1 per cent. level.

N. B.—First dose of bone significantly increases the yield, the increase thereafter with further increment of the dose does not significantly improve the yield (except in the case of bone alone where the effect of the 2nd dose is also significant).

Heavier doses of lime are significantly injurious to the yield.

TABLE IV-B.

Paddy (straw).

	L_0.	L_1.	L_2.	L_3.	L_4.	Average of bone.	S. E. of bone.	C. D. of bone.
B_0	19·2	17·8	30·2	27·8	28·4	24·68	..	..
B_1	52·8	59·8	54·4	43·8	38·4	49·84	1·332	3·749
B_2	66·4	63·2	58·0	47·8	35·0	54·08	..	..
B_3	79·6	69·0	70·4	49·8	44·2	62·60	..	..
Average of lime	54·50	52·45	53·25	42·30	36·50	..	..	..
S. E. of lime	..	..	1·489	..	..	..	..	..
C. D. of lime	..	..	4·191	..	..	..	..	..

Analysis of Variance.

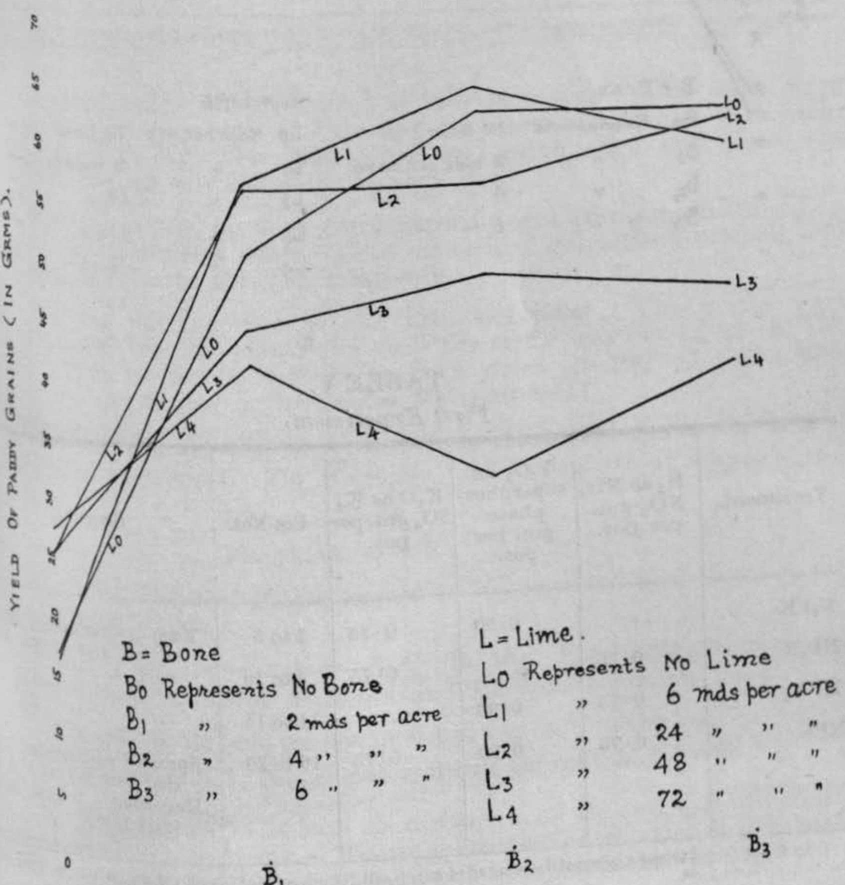
	D. F.	Sum of squares.	Mean square.	Ratio.
Blocks	4	701 ·50	175 ·375	3 ·956*
Lime	4	5,083 ·10	1,270 ·775	28 ·667**
Bone	3	19,929 ·36	6,643 ·120	149 ·862**
Lime+Bone ..	12	4,589 ·54	382 ·462	8 ·628**
Error	74	3,279 ·50	44 ·328	..
Total	97	33,583 ·00	..	..

*Significant at 5 per cent. level.

**Significant at 1 per cent. level.

N. B.—Increase in dose of bone significantly increases the yield of straw, the first dose, however, gives a very high increase.

Heavier doses of lime are injurious to the yield.



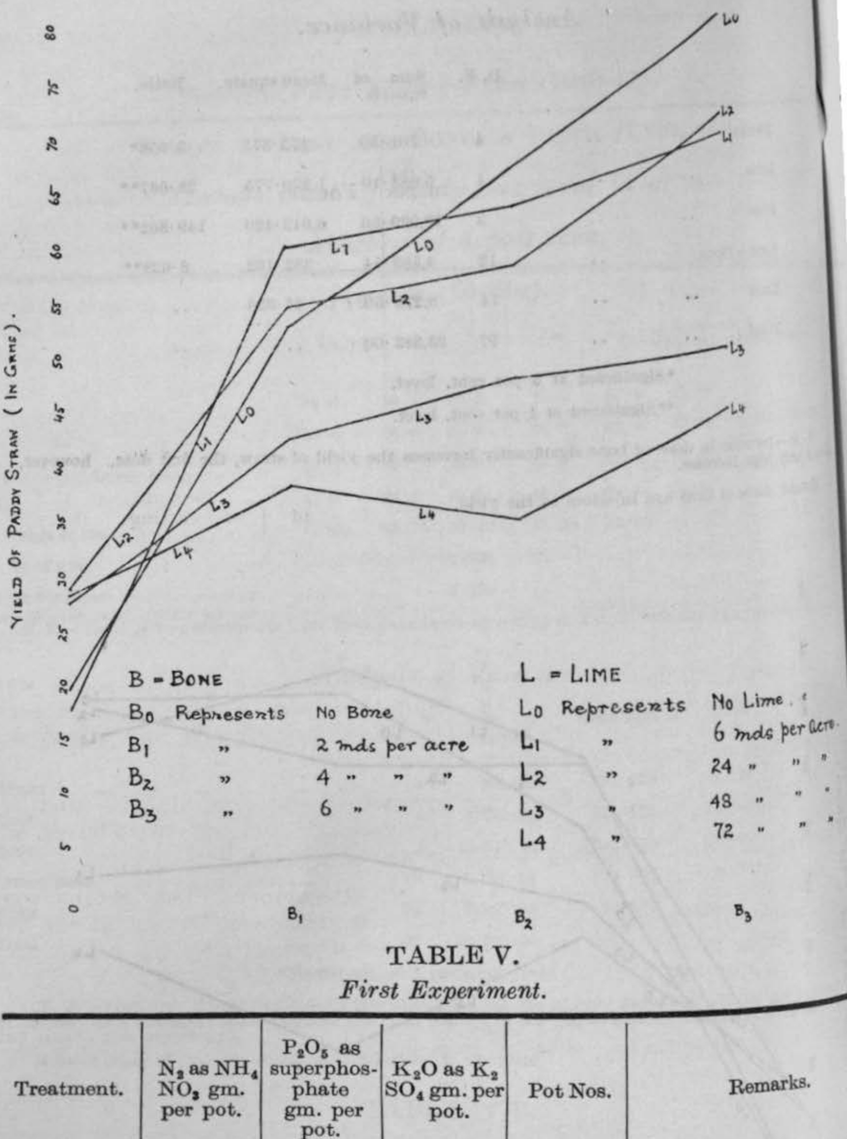


TABLE V.

First Experiment.

Treatment.	N_2 as NH_4 NO_3 gm. per pot.	P_2O_5 as superphosphate gm. per pot.	K_2O as K_2 SO_4 gm. per pot.	Pot Nos.	Remarks.
N_0PK ..	..	0·90	0·75	1 to 5	Each pot contains 6 lbs. of soil and 12 lbs. of sand.
NP_0K ..	0·75	..	0·75	6 to 10	
NPK_0 ..	0·75	0·90	..	11 to 15	
NPK ..	0·75	0·90	0·75	16 to 20	Sprouted seedlings put in the pots on 12-7-40 Harvesting done on 12-12-1940.

N. B.—Besides these a general dressing of ·4 gm. NaCl, ·4 gm. of $MgSO_4$ and 1·5 gm. of Ca CO_3 given to each of these pots.

TABLE VI.

Second Experiment.

Treatment.	N_2 as NH_4NO_3 gm. per pot.	P_2O_5 as superphosphate gm. per pot.	K_2O as K_2SO_4 gm. per pot.	Pot Nos.	Remarks.
$N_1P_1K_1$ ..	0·25	0·30	0·25	21 to 24	Each pot contains 6 lbs. of soil and 12 lbs. of sand.
$N_2P_1K_1$ ..	0·50	0·30	0·25	25 to 28	
$N_3P_1K_1$ ..	0·75	0·30	0·25	29 to 32	
$N_1P_2K_1$ ..	0·25	0·60	0·25	33 to 36	
$N_1P_3K_1$ ..	0·25	0·90	0·25	37 to 40	Sprouted seedilngs put in the pots on 15-7-1940. Harvesting done on 12-12-1940.
$N_1P_1K_2$ ..	0·25	0·30	0·50	41 to 44	
$N_1P_1K_3$ ..	0·25	0·30	0·75	45 to 48	

N. B.—A general dressing of ·4 gm. of NaCl, ·4 gm. of $MgSO_4$ and 1·5 gm. of $CaCO_3$ was also given to each of these pots.

Indrasail paddy was used as the indicator crop. The seeds were sprouted about the middle of July and then put in the pots 2 in each. After about 15 days when they were well established one plant was uprooted keeping only one plant in each pot.

Watering of pots was done every morning and evening with distilled water. The percolated water was received in a galvanised receiver and returned back to the pots quantitatively.

The crop was harvested on the 12th December. The grains were first removed from the plants and then the straw was cut off at the soil level. Both grain and straw were oven dried at 100° C. The crop yields are summarised in the Tables VII and VIII.

Mitscherlichs effect factor $\underline{C}$ has been calculated from the data of the second experiment. For Nitrogen and Phosphate it amounts to—

^{c}Nitrogen—2·25.

^{c}Phosphate—0·855.

The effect factor of Potash comes to be negative and hence is left out of consideration.

Utilising the above values of $\underline{C}$ in the First Experiment the manurial contents (*b*) for Nitrogen and Phosphate amount to—

^{b}Nitrogen—0·336 gms. per pot or 0·012 per cent. in the soil.

^{b}Phosphate—0·275 gms. per pot or 0·010 per cent. in the soil.

The Nitrogen and Phosphate requirements of the soil can be deduced from the above my means of Baule's Graph for relationship between percentage maximum yield and concentration of factor in food units.

For 90 per cent. maximum yield Nitrogen requirement as $(NH_4) NO_3$ is 2·63 maunds per acre and Phosphate requirement as Super (20 per cent. P_2O_5) is 20·7 maunds per acre which is no doubt a very heavy dose.

Mitscherlich method of determining the nutrient contents of soils is based on the assumption that effect factor of one nutrient element is unaltered by the presence or absence of other factors, *i.e.*, there is no interaction between two factors. This assumption is, however, not borne out by the experiments carried out. Moreover the yields of the plants for calculating the "A" (maximum yield) and "C" (effect factor) due to the different nutrients are not significantly different from one another. Hence the results are of doubtful value. It is proposed to continue the experiment next season with certain modifications.

TABLE VII.

First Experiment.

Pot Nos.	Treatment.	Grain yield (oven dried).	Straw yield (oven dried).	Total yield.	Remarks.
1 ..	N_0PK	8·5	16·9	25·4	Mean of 3 pots—1, 2 and 4 = 22·9.
2 ..		7·2	15·2	22·4	
3 ..		6·0	10·2	16·2*	
4 ..		6·6	14·3	20·9	
5 ..		4·8	6·7	11·5*	
6 ..	NP_0K	4·1	7·4	11·5	Mean of 4 pots—6 to 9 = 9·14.
7 ..		3·3	5·6	8·9	
8 ..		2·6	5·7	8·3	
9 ..		0·8	7·0	7·8	
10 ..		1·3	1·6	2·9*	
11 ..	NP_0K	5·7	41·4	47·1	Mean of 5 pots—11 to 15 = 44·97.
12 ..		4·4	33·5	37·9	
13 ..		7·7	27·9	35·6	
14 ..		6·4	46·5	52·9	
15 ..		7·7	43·6	51·3	
16 ..	NPK	15·1	76·5	91·6	Mean of 5 pots—16 to 20 = 89·6.
17 ..		20·7	64·4	85·1	
18 ..		12·6	79·0	91·6	
19 ..		8·4	78·2	86·6	
20 ..		9·7	83·4	93·1	

*Damaged by rats.

TABLE VIII.

Second Experiment.

Pot Nos.	Treatment.	Grain yield (oven dried).	Straw yield (oven dried).	Total yield.	Remarks.
21 ..	$N_1 P_1 K_1$	13·5	25·4	38·9	Mean—36·55.
22 ..		9·4	15·6	25·0	
23 ..		11·2	28·7	39·9	
24 ..		13·1	29·3	42·4	
25 ..	$N_2 P_1 K_1$	15·3	37·2	52·5	Mean—47·85.
26 ..		13·5	40·6	54·1	
27 ..		13·2	31·4	44·6	
28 ..		5·9	34·3	40·2	
29 ..	$N_3 P_1 K_1$	15·3	31·3	46·6	Mean—50·94.
30 ..		5·7	49·3	55·0	
31 ..		15·7	35·0	50·7	
32 ..		9·5	41·9	51·4	
33 ..	$N_1 P_2 K_1$	15·1	30·5	45·6	Mean—43·87.
34 ..		1·4	35·9	37·3*	
35 ..		14·8	30·8	45·6	
36 ..		10·8	28·6	40·4	
37 ..	$N_1 P_3 K_1$	15·2	34·2	49·4	Mean—47·92.
38 ..		16·9	33·4	50·3	
39 ..		14·1	32·2	46·3	
40 ..		14·2	31·4	45·6	
41 ..	$N_1 P_1 K_2$	12·1	23·4	35·5	Mean—38·89.
42 ..		14·0	28·0	42·0	
43 ..		13·1	27·3	40·4	
44 ..		10·9	27·7	37·6	
45 ..	$N_1 P_1 K_3$	12·5	26·4	38·9	Mean—33·96.
46 ..		6·0	17·9	23·9	
47 ..		9·0	26·7	35·7	
48 ..		9·8	27·5	37·3	

*Pot 34 not taken into consideration in calculating the mean.

Examination of soils.—I. Chemical and mechanical examination of samples of soils from (1) Kantabari police-station Gobindaganj, district Rangpur, (2) Daulatpur Agricultural Institute, Khulna and (3) and (4) Kasch soils from Rampur and Charandwip, Cox's Bazar, Chittagong, were done. For results *see* Appendices IX and X.

(i) *Kantabari soils* contain high percentage of alumina and a fair amount of potash but are poor in phosphate and lime. With the increase of depths lime decreases but phosphate, potash and magnesia increase. Like Teesta Silt soils magnesia predominates over lime and this is more pronounced in lower depths. The surface soil contains about equal proportions of coarse and fine particles as represented by sand and silt and clay but in sub-soils sand decreases while clay increases.

(*ii*) *Daulatpur soils* are fairly well supplied with phosphate and potash and moderately so with lime and magnesia (lime predominating over magnesia). It contains fair proportions of fine sand and silt. The texture is neither too close nor too open.

(*iii*) *Kasch soils* at Rampur and Charandwip are rich in semi-decomposed organic matter and fairly well supplied with potash. Phosphate is moderate and lime very poor.

Both the soils are heavy in texture. Rampur soils contain high proportions of silt and clay with very little of sand while there is a fair amount of fine sand present at Charandwip.

II. Physical examination was done of some samples of soils from Harmati *khas mahal* area in the district of Jalpaiguri with a view to test the suitability of the area for irrigation.

The analytical data together with those of the Mainaguri Farm soils are given in the Appendix XI.

The soils were found to be of a sandy nature with high percolation and low retention capacity and hence the proposed irrigation area would not be suitable for irrigation.

Work on cow's milk.—Physico-chemical analysis of cow's milk was taken up during the year under report. The work was confined to milk from cows of *deshi* breed only. Cows of *deshi* breed round about the farm were selected at random. The first batch of owners of cows supplied milk for some time and then refused when new cows had to be selected. Milk both morning and evening from 13 individual cows was put to analysis. Evening milk had to be preserved by adding a few drops of formalin and analysed the following morning. Altogether 565 samples of milk were put to examination which included certain composite samples of milk. Yield of milk, specific gravity, fat and solid not fat were determined while on the chemical side the determinations made were of total protein, casein, other proteins, ash, P_2O_5, CaO and Lactose. The analytical data are summarised in the Appendices XII and XIII. It should be noted that the data thus obtained are insufficient to form a general conclusion.

Work on linseed.—This is a continuation of last year's work to see whether the drying quality of linseed is purely a hereditary factor or it is influenced largely by environmental conditions such as soil and climate.

A large number of samples of linseed from different parts of India was collected last year (1939-40). They were analysed for their oil content and iodine value. The latter is a measure of the drying quality. The greater the iodine value the greater is the drying power and the better the quality.

TABLE IX.

Oil content and Iodine Value in Linseed.

Serial No.	Samples of Linseed.	Samples of linseed collected from different parts of India, 1939-40.		Samples of linseed obtained by growing them at Dacca Farm, 1940-41.	
		Oil content.	To iodine value.	Oil content.	To iodine value.
		Per cent.	Per cent.	Per cent.	Per cent.
1	Linseed 483 Cawnpore, U. P. ..	40·5	174·86	40·4	178·1
2	Linseed 1196 Cawnpore, U. P.	44·3	170·12	41·6	172·7
3	Linseed 477 Cawnpore, U. P. ..	38·7	170·64	39·5	174·37
4	Linseed 1150 Cawnpore. U. P.	43·4	184·91	40·0	173·88
5	Linseed 1193 Cawnpore, U. P.	44·4	172·37	40·2	171·90
6	Linseed E. B. 3 Nagpur, C. P.	42·4	178·03	38·9	180·26
7	Linseed 3243 Nagpur, C. P. ..	41·9	173·43	38·2	181·51
8	Linseed F55 Nagpur, C. P. ..	41·1	172·80	38·0	182·90
9	Linseed local Nagpur, C. P. ..	40·0	177·32	38·7	181·35
10	Linseed 3255 Nagpur, C. P. ..	40·2	174·00	33·0	186·25
11	Linseed I. S. 2 Indore ..	44·2	176·68	43·1	181·48
12	Linseed I. S. 5 Indore ..	45·8	179·80	40·4	179·82
13	Linseed I. S. 11 Indore ..	48·0	183·89	41·8	Too small.
14	Linseed I. S. 65 Indore ..	46·5	182·97	42·6	185·09
15	Linseed X Nagpur, C. P. ..	45·9	181·81	43·3	185·87
16	Linseed 1206 Cawnpore, U. P.	47·5	186·41	41·6	Too small.
	Average ..	43·3	176·41	40·1	179·68
17	Linseed P. H. 52 Dacca Farm	43·4	188·32	44·1	184·71
18	Linseed P. H. 6 Dacca Farm ..	43·9	189·61	44·3	189·32
19	Linseed B. 26 Dacca Farm ..	39·0	176·58	39·2	176·60
20	Linseed B. 63 Dacca Farm ..	40·1	177·64	42·2	178·80
21	Linseed B. 61 Dacca Farm ..	41·5	171·60	43·1	175·65
22	Linseed B. 66 Dacca Farm ..	38·7	165·64	41·3	168·11
	Average ..	41·02	178·23	42·37	178·86

The samples were then made over to the Second Economic Botanist Bengal, for raising them at the Dacca Farm. The linseed obtained by him at Dacca was similarly analysed for oil content and iodine value. The data together with the previous ones are set forth in the Table II.

The average oil content is 40·1 (1940-41) as against 43·3 (1939-40) and the average iodine value is 179·68 (1940-41) as against 176·41 (1939-40). Thus there has been a fall in the oil content but a rise in the iodine value.

The previously acclimatised samples (Nos. 17 to 22) do not show such change. The average value of the oil content as also of the iodine value has remained more or less steady. The average oil content is 42·37 (1940-41) as against 41·02 (1939-40) and the average iodine value (1940-41) is 178·86 as against 178·23 (1939-40). Thus there is no doubt that environment does exercise a certain influence on the quality of seeds when freshly imported. The quality of the acclimatised seeds (Nos. 17 to 22) has however remained more or less steady.

In P.H.52 and P.H.6 Bengal has got two acclimatised strains of linseed which have got high oil percentage (44 per cent.) and iodine value (188 to 189). They may be grown in Bengal without fear of further deterioration in quality.

Trial may also be given to acclimatise linseed strain Nos. I.S. 2 Indore and O.S. × Nagpur (C. P.) for high oil content and strain Nos. 3255 Nagpur. (C. P.) and I.S. 65 Indore for high iodine value.

Miscellaneous.—As a part of the routine work a large number of samples consisting of soils, oilcakes, fertilisers, activated sludge, bat's guano, cotton seeds, fish refuse, etc., were analysed.

Besides the above, soils, water, etc., had to be examined for opinion as regards their suitability for special purposes such as irrigation, drinking, etc.

Examination of a very large number of samples of sugarcane juice and gur was also done as usual.

Manurial experiments.—Two new experimental plots were laid out this year at the Dacca Farm at Sunti Low and West Suti with the object (1) to find out the most economic dose of bone in combination with the readily available organic manures such as cowdung, compost and green manures for transplanted paddy on red laterite soil, and (2) to evaluate compost as manure against cowdung.

The results of the existing manurial experiments at the Dacca Farm and elsewhere have been given in the Appendices XIV and XV to XVIII.

Statistical examination has been done of the results of some of the experimental plots which have been tabulated below. (Tables X to XV.)

I. (*a*) **Napier grass Manurial experiment at the Dacca farm :**—The results of 4 harvests during the season 1939-40 have been statistically examined and summarised in Table X.

TABLE. X.

Yield in lbs. of Napier Grass.

Period —1st June 1939 to 30th May 1940 (Full manure season).

4 harvests on 18th July 1939, 12th October 1939, 27th February 1940 and 30th May 1940.

ORGANIC MANURES *Vs.* CHEMICAL FERTILISERS.

7 treatments with and without lime × 4 replications.

With Lime.

	A	B	C	D	E	F	G	Total.	
I ..	1,432	1,313	1,275	1,206	883	1,026	1,133	8,268	
II ..	1,419	1,352	1,254	988	624	1,006	1,304	7,947	
III ..	1,468	1,258	1,211	1,134	675	901	1,130	7,777	
IV ..	1,046	1,187	1,081	1,030	749	886	1,098	7,077	
Total ..	5,365	5,110	4,821	4,358	2,931	3,819	4,665	31,069	= Grand total.

Summary.

	A	B	C	D	E	F	G	S.E.	C.D.
Maunds per acre ..	817·8	779·0	734·8	664·3	446·8	582·2	711·1	28·38	84·3
Per cent. ..	183·04	174·34	164·48	148·69	100·00	130·30	159·16	6·35	18·88

N. B.—Significant at 1 per cent. level.

Without Lime.

	A	B	C	D	E	F	G	Total.	
I ..	1,236	1,245	1,143	855	489	605	979	6,552	
II ..	1,065	1,342	1,244	657	1,014	625	1,015	6,962	
III ..	1,044	1,078	899	920	479	789	624	5,833	
IV ..	1,075	952	923	805	644	838	982	6,219	
Total ..	4,420	4,617	4,209	3,237	2,626	2,857	3,600	25,566	= Grand total.

Summary.

	A	B	C	D	E	F	G	S.E.	C.D.
Maunds per acre ..	673·8	704·4	641·6	493·4	400·3	435·5	548·8	49·16	146·1
Per cent. ..	168·32	175·82	160·28	123·27	100·00	108·80	137·09	12·28	36·47

N. B.—Significant at 1 per cent. level.

Remarks—

Treatments—

A. Niciphos.
B. Ammonium Sulphate.
C. Rape cake.
D. Farm-yard Manure.
E. Control.
F. Rotted water hyacinth.
G. Ammonium Sulphate (½N_2 in June) plus Farmyard manure (½N_2 in October).

Manures applied twice in the season (June and October) on the basis of 100 lbs. N_2 during the full season (50 lbs. N_2 per application excepting in G).

Lime applied once in the season at 15 mds. per acre.

The Chemical fertiliser Niciphos and Amonium Sulphate have done better than the Organic Manures in the limed and unlimed plots as in the previous years. Limed plots have given more yields than the unlimed plots.

TABLE XI.

I. (*b*) *Manurial experiment on Napier grass (1936-37 to 1939-40), Dacca Farm.*

(Unlimed plots.)

Analysis of variance.

—	D.F.	Sum of squares.	Variance.	Ratio of variances.
Years	3	3,874,623·20	1,291,541·07	95·98*
Blocks	3	462,314·28	154,104·76	11·45*
Treatments	6	2,376,750·67	396,125·11	29·44*
Years × treatments ..	18	165,384·06	9,188·00	0·68
Error	81	1,089,916·95	13,455·89	
Total ..	111	7,968,989·16		

*Significant at 1 per cent. level.

Year.	Average yield per treatment (in lbs.) for each year (1/50 acre plots).					
	Am. Sulph.	Niciphos.	Rape cake.	Am. Sulph. and F. Y. M.	F. Y. M.	Water Hyacinth.
1936-37 ..	1,413·8	1,304·1	1,204·8	1,077·4	1,019·4	982·1
1937-38 ..	1,281·8	1,123·5	1,177·8	944·8	939·8	893·6
1938-39 ..	810·3	736·3	743·0	649·8	534·8	543·8
1939-40 ..	1,154·3	1,105·0	1,052·3	900·0	809·3	714·3
Average yield in maunds per acre.	710	651	629	544	504	478
Per cent. ..	154·0	141·2	136·4	118·0	109·3	103·7

—	Average yield per treatment (in lbs.) for each year (1/50 acre plots).			Average yield per year.		
	Control.	S.E.	C.D.		S.E.	C.D.
1936-37 ..	1,048·2	58·00	163·22	1,143·79	10·96	30·85
1937-38 ..	825·8			1,019·50		
1938-39 ..	492·0			644·18		
1939-40 ..	656·5			913·07		
Average yield in maunds per acre.	461	17·68	49·76			
Per cent. ..	100·0	3·84	10·79			

(Limed plots.)

Analysis of variance.

	D.F.	Sum of squares.	Variance.	Ratio of variances.
Years	3	4,037,926·12	1,345,975·38	94·93*
Blocks	3	382,424·71	127,474·90	8·99*
Treatments	6	3,061,274·37	510,212·39	35·99*
Years × treatments	18	273,190·79	15,177·27	1·07*
Errors	81	1,148,424·69	14,178·08	1·07*
Total ..	111	8,903,240·68		

*Significant at 1 per cent. level.

Year.	Average yield per treatment (in lbs.) for each year (1/50 acre plots).					
	Niciphos.	Am. Sulph.	Rape cake.	Am. Sulph. and F.Y.M.	F. Y. M.	Water Hyacinth.
1936-37 ..	1,486·8	1,441·0	1,231·1	1,169·1	1,313·7	1,015·5
1937-38 ..	1,485·5	1,333·0	1,148·5	1,140·0	1,114·3	964·3
1938-39 ..	936·8	844·5	751·5	849·5	667·0	634·0
1939-40 ..	1,341·3	1,277·5	1,205·3	1,166·3	1,089·5	954·8
Average yield in maunds per acre.	793	746	661	659	638	544
Per cent. ..	166·2	156·4	138·6	138·2	133·8	114·0

	Average yield per treatment (in lbs.) for each year (1/50 acre plots).			Average yield per year.		
	Control.	S.E.	C.D.		S.E.	C.D.
1936-37 ..	1,019·6	59·54	167·56	1,239·53	11·25	31·67
1937-38 ..	877·5			1,144·71		
1938-39 ..	497·3			740·07		
1939-40 ..	732·8			1,109·61		
Average yield in maunds per acre.	577	18·15	51·09	..	..	..
Per cent. ..	100·0	3·80	10·71	..	..	..

From the analysis of variance it is found that the variance due to years, blocks and treatments are all highly significant for both limed and unlimed plots. The interaction between years and the treatments is insignificant in both the cases, showing that the treatments have behaved more or less in the same way in all the four years. The effect of liming cannot be studied statistically as the layout is not suitable for such an analysis. It is to be observed, however, that in all the cases limed plots give a heavier yield. The heaviest yields have been observed in the case of Ammonium Sulphate and Nicifos in the case of unlimed plots. In the limed plots these two again give the heaviest yield but in this case Nicifos gives a heavier yield than Ammonium Sulphate.

For the unlimed plots, a progressive, significant deterioration in the yield is observed for all treatments. In the case of limed plots, however, such significant deterioration is observed in three cases only, viz., for F.Y.M., Am. Sulph. and Control. The over all average yield per year shows a significant deterioration from year to year for unlimed plots, but no such deterioration is observed after the second year in the case of limed plots. The yield in the third year is very low in all the cases due to want of rain.

II. *Complex variety Manurial Experiment on Transplanted Paddy at the Chinsurah Farm (season 1940-41).*—This is a permanent manurial experiment to find out a suitable manure for transplanted paddy under conditions obtaining at the Chinsurah Farm.

The detailed figures of yields are given in the Appendix XV. The results of statistical examination are given below (Table XII).

4 manurial treatments × 4 varieties of paddy.

System of replication—Split plot type with manures as whole plots arranged in Latin Squares and varieties of paddy as sub-plots also arranged in Latin Square.

Number of replications of the entire system—2.

TABLE XII.

II. COMPLEX VARIETY MANURIAL EXPERIMENT, CHINSURAH FARM (SEASON 1940-41).

Analysis of Variance.

Blocks	1	15·5822		
Rows	6	50·6772		
Columns	6	90·0227		
Manures	3	334·3426	111·4475	
Error	15	23·7634	1·5842	
Varieties	3	1,092·6513	364·2171	
Variety × Manure ..	9	37·0448	4·1161	2·076
Error	84	166·4749	1·9818	
	127	1,810·5591		

Total yield of paddy (Grain) in seers per 8 plots (1/60th acre each).

Main treatment manure.	Sub-treatment (variety).				Manure total.	S. E. of manure total.	Remarks.
	L.	C.	J.	B.			
							Main treatment.
0 ..	121·51	125·02	131·14	82·00	459·67		Manures per acre. O.—Control.
Ni ..	171·51	158·25	159·02	109·38	598·16		Ni.—Nicifos.
Cd ..	155·01	149·63	144·26	88·07	536·97	3·560	(20 lbs. N_2 & 20 lbs. P_2O_5).
As+S ..	160·02	155·77	153·26	100·25	569·30		Cd.—Cowdng (20 lbs. N_2).
Variety total	608·05	588·67	587·68	379·70	2,164·10		As+S.—Am. Sulph.
S.E. of variety total ..			3·982				(20 lbs. N_2)+ Super. (20 lbs. P_2O_5).

Effect of Main treatments (Manures).

Mean yield.	O.	Ni.	Cd.	As+S.	Mean.	S.E.
Maunds per acre.	21·55	28·04	25·17	26·69	25·36	0·187
Per cent. ..	84·98	110·57	99·25	105·24	100·00	0·67

Effect of sub-treatments (varieties).

	L.	C.	J.	B.	Mean.	S.E.	Sub-treatment varieties.
Mean yield ..	28·50	27·59	27·55	17·80	25·36	0·187	L=Latisail. C=Chinsurah II. J=Jhingasail.
Maunds per acre per cent.	112·38	108·79	108·64	70·19	100·00	0·74	B=Badkalamkati (65).

As before all the 3 manures have given significantly better yields than the Control. Nicifos has done the best followed by Am. Sulph. +Super and Cowdung. Of the varieties Latisail has done the best and Badkalamkati the poorest. Chinsurah II and Jhingasail are almost on a par.

III. *Manurial experiment with Nicifos on transplanted paddy (Chinsurah II) at the Chinsurah Farm (season 1940-41).*—The object of the experiment is to find out the most economic dose of Nicifos for transplanted paddy under Chinsurah Farm conditions. The detailed figures of yields are given in the Appendix XVI. For statistical examination see Table XIII.

TABLE XIII.

NICIFOS MANURIAL EXPERIMENT ON TRANSPLANTED PADDY (CHINSURAH II).
4 treatments × 4 replications (Latin square).

Actual yield of paddy (grains) in maunds per plot (1/10th acre).

	0 Ni.	1 Ni.	2 Ni.	3 Ni.	Total.
I	2·344	2·419	2·625	3·237	10·625
II	1·756	2·469	2·944	2·787	9·956
III	2·294	2·650	3·125	3·219	11·288
IV	2·256	2·694	3·069	3·075	11·094
Total ..	8·650	10·232	11·763	12·318	42·963

Summary.

Grains.

					Mean.	S.E.	C.D.
Maunds per acre ..	21·625	25·580	29·408	30·800	26·853	0·606	2·246
Per cent. ..	80·23	95·26	109·51	114·70	100·00	2·256	8·368

N.B.—Significant at 1 per cent. level.

Straw.

Maunds per acre ..	26·328	31·923	37·375	41·768	34·348	0·977	3·622
Per cent. ..	76·65	92·94	108·81	121·60	100·00	2·844	10·543

N.B.—Significant at 1 per cent. level.

Yield increase with the increasing doses of Nicifos both in the case of grain and straw. But the difference between 3 Ni and 2 Ni is not signicant at 1 per cent. level in the case of grains.

Treatment 2 Ni, *i.e.*, 30 lbs. of N_2 and P_2O_5 per acre seems to be the most economic dose.

N.B.—It is now proposed to continue the experiment with smaller doses of Nicifos after one year's trail without any manure to allow for residual effect if any.

IV.—Green manure Experiment on transplanted paddy at the Suri Farm (season 1940-41.)—The scheme of the experiment was slightly modified. The green manures were previously applied on equal dry matter basis. This season they were applied on equal nitrogen basis—56 lbs. of nitrogen per acre in the form of sunnhemp, dhaincha and cowpea. Dhaincha was grown on all the plots but it was cut off and only such quantity as would give 56 lbs. of nitrogen per acre was applied to the respective plots.

Detailed figures of yields are given in the Appendix XVII and summarised in the Table XIV.

TABLE XIV.

4 treatments × 8 replications (4 × 4 Latin squares in two blocks).

Yield of paddy in lbs. per plot (1/40th acre).

Block.	Grains.				Straw.			
	Nil.	Cowpea.	Dhaincha.	Sunn-hemp.	Nil.	Cowpea.	Dhaincha.	Sunn-hemp.
G21 ..	14·94	22·75	12·44	14·69	24·00	30·63	23·75	25·00
G22 ..	16·94	21·06	17·81	18·38	24·75	34·50	35·50	30·25
G23 ..	17·00	11·94	15·31	12·50	26·75	24·00	29·25	22·75
G24 ..	19·94	16·63	13·44	21·19	32·00	26·50	30·00	33·50
L6 ..	7·31	13·94	6·56	8·38	11·75	21·50	11·50	16·00
L8 ..	23·06	27·44	19·19	23·88	26·50	35·00	28·25	27·50
L7 ..	18·69	29·31	26·75	33·88	22·25	41·00	33·00	36·00
L4 ..	31·94	35·06	27·88	28·81	36·00	37·75	33·25	32·50
Total ..	149·82	178·13	139·38	161·71	204·00	250·88	224·50	223·50

Summary.

(Grains.)

	Nil.	Cowpea.	Dhaincha.	Sunn-hemp.	Mean.	S. E.	C.D.	
Lbs. per plot.	18·73	22·27	17·42	20·21	19·66	1·174	3·455	Mahalanobis × test satisfied at 5 per cent. level.
Lbs. per acre.	749·2	890·8	696·8	808·4	786·4	46·96	138·20	

Cowpea gives heaviest yield but is not significantly superior to Sunn-hemp and barely superior to no manuring. Dhaincha gives poorest yield.

(Straw.)

	Nil.	Cowpea.	Dhaincha.	Sunn-hemp.	Mean.	S. E.	C.D.	
Lbs. per acre.	1,020·0	1,254·4	1,122·5	1,117·5	1,128·6	56·40	165·98	Mahalanobis × test not satisfied.

Cowpea gives the heaviest yield but is not significantly superior to Dhaincha or Sunn-hemp.

Manurial experiment on sugarcane at the Dacca Farm (season 1940-41) ratoon crop—Co. 213.—The detailed analytical results are given in the Appendix XVIII and summarised in the Table XV.

TABLE XV.

6 treatment × 6 replications (Latin square).

	A	B	C	D	E	F	Average	S.E.	C.D.
Stripped cane.									
Average yield maunds per plot (1-50th acre).	8·642	9·475	9·508	9·793	10·198	9·550	9·628	0·4223	1·2458*
Per acre ..	432·10	473·75	475·40	489·65	509·90	477·50	466·40	21·11	62·29
Per cent. ..	92·6	101·6	101·9	105·0	109·3	102·4	100·0	4·53	13·36
Gur.									
Yield (maunds per acre) per plot.	1·152	1·152	1·187	1·213	1·203	1·148	1·176	0·049	0·070*
Per acre ..	57·60	57·60	59·35	60·65	60·15	57·40	58·80	2·45	3·50
Per cent. ..	97·96	97·96	100·94	103·15	102·30	97·62	100·00	4·17	5·95
Sucrose.									
Sucrose per cent. cane.	20·213	19·673	20·038	20·047	20·048	20·288	20·051	0·325	0·960*
Per cent. ..	100·81	98·12	99·94	99·98	99·99	101·18	100·00	1·62	4·79

*Mahalanabis × test not satisfied.

Remarks.—No significant difference between any of the treatments. Compared with the plant crop (1939-40) the ratoon has given more outturn in cane and gur in all the treatments though sucrose per cent. juice per treatment has remained almost the same. Last year's average yield for cane and *gur* per acre were 328·00 maunds and 35·14 maunds, respectively.

Treatments.—

A—Cowdung.

B—Cowdung *plus* Bone.

C—Cowdung *plus* Castor Cake (half in trench and half at first earthing).

D—Cowdung *plus* Castor Cake *plus* Bone.

E—Cowdung *plus* Nicifos (hot weather application with first earthing).

F—Cowdung *plus* Nicifos (half hot weather and half monsoon application).

N.B.—

Plant crop—Per acre application per treatment 36 lbs. N_2 and 32 lbs. P_2O_5 with a general dressing of cowdung at the rate of 150 maunds per acre.

Ratoon crop—Half of the doses of N_2 and P_2O_5 including general dressing.

Berseem.—The trial of berseem was continued on a small scale in 6 different farms—Dacca, Rangpur, Pabna, Berhampore, Dinajpore and Faridpur. Previous to sowing seeds were treated with bacterial culture received from Layallpur, Punjab. Watering was sparingly done to see if it could be grown without irrigation. It should be noted that the season was characterised by almost total lack of rainfall since it was sown. In spite of that the crop did quite well at Pabna and Faridpur. At Rangpur a medium crop was obtained but elsewhere it was poor or a complete failure. The performance of the crop in the various farms is given below—

(1) *Dacca Farm.*—Tried in wet paddy lands. The seeds germinated but the plants after growing about an inch remained stunted and refused to grow.

(2) *Rangpur Farm.*—Tried in high lands with and without bacterial culture. The treated seeds gave a decidedly better crop. The plants were more succulent and had a dense mass of root nodules. Sown on 0;015 acre on the 11th October 1940—two cuts of crop were obtained on 23rd December 1940 and 27th February 1940. The yields of green crop were as follows:—

	Treated.	Untreated.
Actual yields mds. —		
1st cut	3·50	2·50
Per 0·015 acre—		
2nd cut	4·75	2·60
Calculated per acre—		
1st cut	233	167
2nd cut	317	173
	=550	=340

(3) *Dinajpore Farm.*—Tried on medium and low land with bacterial culture. The low land crop was better than the medium land crop. Only one cut of crop was obtained. Sown on *27th October 1940*, the actual yields of green crop in medium and low lands were respectively 2·25 maunds and 3·88 maunds (harvest and on 19th March 1941) per 0·025 acre each. Yields calculated per acre=90 maunds (medium land) and 155 maunds (low land).

(4) *Berhampore Farm.*—Sown on 8th November 1940 in an area of 0·025 acre—the crop could make only a struggling existence in spite of 4 irrigations. The yield was only 7 seers.

(5) *Pabna Farm.*—Tried on high land with bacterial culture in an area of 0·03 acre. The general condition of the crop was satisfactory. Two cuts of crop were obtained about the end of January and middle of March. Sown on *31st October 1940*, the actual yields of green crop were 10·53 maunds and 11·25 maunds, respectively, for the 1st and 2nd cut. Yields calculated per acre—351 maunds (1st cut) and 375 maunds (2nd cut): total—726 maunds.

(6) *Faridpur Farm.*—Tried on high land and low land. The high land crop was quite good but that on the low land was a failure. Sown on 0·02 acre on the 12th October 1940—two cuts of crop were obtained on 24th January 1941 and 24th February 1941 in the high land. The yields of green crop were as follows:—

Actual yields maunds per 0·02 acre—	Mds.	Mds.
1st cut	3·44	
2nd cut	4·69	
Calculated per acre—		
1st cut	172	
2nd cut	235	
		=407

Programme of work for the next year (1941-42).

(i) (a) More Irrigation Scheme: Soil Survey to be brought to a finish.

(b) Soil survey: Preliminary survey to be done in the district of Dacca with the appointment of the new staff which is pending before the Government.

(ii) Influence of Lime on the liberation of Phosphate and Potash in red-soils—To be continued.

(iii) Nutrition of paddy—Pot-culture study to be continued.

(iv) Study of the decomposition of organic matter in the soil under Dacca Farm conditions—To be continued.

(v) Mitscherlich's Test—Pot-culture study to be continued.

(vi) Determination of the physico-chemical constants of linseed oil with regard to selection of strains—To be continued.

(vii) Fixation of the physico-chemical standards of milk—To be continued.

(viii) Trial of Copper Sulphate on the yield of paddy as an experimental measure on field scale in Kasch soils at Badarkhali, Cox's Bazar, Chittagong.

(ix) Manurial experiments on field crops at Dacca Farm and elsewhere.

(x) Sugarcane—Critical studies of the promising varieties of canes at the Dacca Farm and elsewhere—To be continued.

(xi) Tobacco—To develop a suitable technique for the raising and flue curing of cigarette tobacco at the Tobacco Farm, Rangpur.

In conclusion I wish to acknowledge with thanks the valuable service rendered by Babu Prabhat Ranjan Roy, M.Sc., Statistician, in connection with the statistical examination of the experimental data.

Schemes financed by the Imperial Council of Agricultural Research.

Animal Nutrition Section.—The following work was conducted during the year under report:—

(1) Completion of the analytical side of the feeding and digestion experiments undertaken in the preceding year.

(2) Investigation on the feeding value of rice straw from saline tracts.

(3) Investigation on the rice bye-products in reference to their composition, utilization and phosphorus availability.

(4) Analysis of miscellaneous fodders and feeds.

(5) Miscellaneous.

(1) The digestion experiments referred to were—

(a) experiments with two pure varieties of rice straw, viz., Indrasail and Latisail, and

(b) experiments with the freshly harvested *aus* rice straw.

(a) *Experiments with the pure varieties of rice straw, viz., Indrasail and Latisail.*—Indrasail and Latisail feeding was conducted with mustard cake as concentrate. In composition Indrasail was slightly superior to Latisail in organic matter, protein, ether extract and soluble ash. Latisail contained more insoluble ash. The feeding and digestion results show that the percentage digested from Indrasail straw is definitely more in dry matter, organic matter, protein, ether extract and fibre. Besides the results of Indrasail are steadier. The nitrogen balance is negative in both.

The results emphasise the necessity to conduct more work with pure variety as opposed to mixed variety.

(b) *Experiment with freshly harvested aus straw.*—The digestibility figures show that freshly harvested straw provides a more readily digestible proportion in almost all components. The experiment suffered from one disadvantage, viz., that the day to day samples of straw instead of being separately analysed, had to be made into one composite sample for the whole period and then analysed. Only nitrogen was separately estimated and from the results of nitrogen it appears that the variation is very large. This limitation has particularly affected the results of nitrogen and mineral balances. Nevertheless the results leave no doubt that the freshly harvested straw is decidedly of superior value to that of the dried product.

(2) *Investigation on the feeding value of Amon straw from saline tract.*—The straw was brought from Kheppupara of Barisal district and the experiment was conducted in two lots. In the first lot 10 animals were divided into three groups—3 with rice *kura*, 3 with mustard cake and 4 with straw only. In the second lot also ten animals were used as follows:—3 with til cake 4 with matikalai and 3 with khesari. The result show that when straw is used as a single feed consumption is definitely low and protein digestion is either low or negative. The digestibility of crude protein is better with til cake, matikalai and khesari. Til cake also records a definitely marked superiority in the digestibility of crude fibre and also nitrogen-free extract.

(3) In investigating with rice bye-products, attention was directed to the following:—

(*i*) Bye-products available from country process or home manufacture of rice.

(*ii*) Bye-products from the smaller mills run either by crude oil engine or electricity.

(*iii*) Bye-products from the bigger rice mills producing from 150 to 800 maunds of rice per day.

A large number of samples were collected and an appreciable number analysed. The richest part from the standpoint of cattle feed is the portion held between the outer husk and the finished rice used for human consumption. As soon as the hard outer husk is milled out the grain is left with a light brown or red or deep brown coat. This consists of fine layers rich in protein, oil and phosphorus and constitutes the true bran. This is however mixed up with the different products depending on the methods of milling. The aim is at present to fractionate the useful parts and estimate its proportion, consumption and feeding value. The work so far shows that the oil content varies from 10 to 20 per cent. protein from 7 to 15 per cent. and phosphorus (P_2O_5) from 2 to 6 per cent. The assimilation of phosphorus is another important aspect engaging the attention of the section.

(4) *Analysis of miscellaneous fodders and feeds.*—This consisted of two parts—

(*a*) estimation of protein and dry matter on the spot of the fodders, tree fodders and feeds of Darjeeling district, and

(*b*) consumption of some of the pure strains of rice straw.

In the former case as many as 64 samples were analysed. It is noted that some of the loppings of tree fodders when calculated on dry basis are as rich in protein as high class cakes and concentrate. The results suggest that fodders of the Darjeeling district are quite rich in essential constituents and this may account for the better condition of cattle there as compared to some of the plains.

The analysis of rice straw refers to six important Departmental strains, viz., Kalamkati 147, Kalma 222, Indrasail, Chinsurah II, Patnai 23 and Patnai 298. In each case composite samples of three plots of Chinsurah Farm were made and analysed. As observed in a similar analysis of *aus* straw last year protein bears a direct relation with soluble ash and inverse relation with fibre contents. Kalamkati 147 records the highest proportion of protein soluble mineral matter and lesser amount of crude fibre.

(5) *Miscellaneous.*—A very interesting and fruitful line of investigation has been initiated for the direct estimation of individual digestibilities of feed nutrients. The work is still in an experimental stage.

Physical Section for the Study of Soil Problems in Bengal.—The main lines of work consisted of the following:—

I. *Determination of wilting point in soils.*—Investigations on the method of determining the wilting point were continued. It was shown in the previous year that the moisture contents of soils at the wilting point could be deduced from the evaporation curves and the results obtained by the method were compared with those of the other methods such as Schofield's PF method. The close agreement between them left little doubt as to the validity of the method. In order to verify

the results the wilting point was determined this year by actual test by using plants as indicators. Rice plants were used for the purpose and were allowed to grow in small pots—When the plants wilted the soil moisture was determined.

It may be seen from the Table XVI that the wilting point determined by using plants as indicator is not far off from that obtained from the evaporation curves. Thus the method affords a new way to determine wilting point (*vide* Table XVI).

II. *The equilibrium distribution of water in soil over water.*—The equilibrium distribution of water in a column of soil standing on water was investigated. Several types of soil were examined. There was a gradual decrease in the moisture content. The moisture content of the soil at the top of the tube however did not vary far from that at the bottom. The relation between the soil moisture and the height may be represented by an expression $y = mx + c$ where x is the moisture content at a height y and c is a constant.

III. *Water requirement of crops.*—An experiment on the requirement of soil moisture for crops was conducted under field conditions.

It was designed to show that given equal number of irrigations to linseed plants what should be the minimum quantity of water at each irrigation. The quantity of water was measured in inches. One series of plots were given 4/5th inches of water at a time, the second series 1 inch and the third and last series 1 3/5th inches of water at a time. Four such waterings were applied to each plot. The results show that there is no advantage by applying more water than 1 inch at a time in the case of the straw while the yield of seed increases with the increasing quantity of water, the highest yield being recorded with 1 3/5th inches of water.

TABLE XVI.

Soils.	Moisture content at the wilting point.		
	From the evaporation curves. (1)	Schofield's methods (PF curves). (2)	By using plant on indicator. (3)
	Per cent.	Per cent.	Per cent.
Rajshahi	6·04	6·00	6·6
Satmajid	7·21	6·50	9·785
Rangpur	3·7	4·2	3·045
Dacca	7·1	6·5	7·82
Bankura	5·6	..	5·32
Burdwan	4·6	..	5·227
Birbhum	1·12	1·4	1·8

The figures in the columns (1) and (2) have been reprinted from the previous year's Annual Report.

Sugarcane Testing Station, Dacca Farm.—The total number of varieties under test at the Cane Station during 1940-41, was 32.

They consisted of—

1st year of test	11
2nd year of test	9
3rd year of test	11
Standard Co. 213	1
	32 only.

Selection from the Cane Testing Station.—Eight varieties, viz., Co. 451, Co. 457, Co. 535, Co. 546, Co. 547, Co. 548, Cos. 112 and B 6308 were selected for preliminary trial: 15 varieties were retained for further observation and 9 varieties rejected.

New arrivals from Coimbatore during 1941-42.—Twelve varieties only, viz., Co. 466, Co. 467, Co. 468, Co. 469, Co. 555, Co. 556, Co. 557, Co. 558 and Co. 396, C. P. 28/11, C. P. 28/19, C. P. 29/320 were received from Coimbatore and they were duly planted.

Prefinal selection trial (Dacca Farm).—Altogether 9 varieties, viz., Co. 453, Co. 541, Co. 540, Cos. 127, Co. 446, Co. 213 (Standard), Cos. 87, Co. 534 and Co. 544 were tried. The results are summarised in the Table XVII.

TABLE XVII.

SUGARCANE, DACCA FARM (INTER BLOCK), *1940-41.*

	Co. 453	Co. 541	Co. 540	Co. 127.	Co. 446	Co. 213	Cos. 87	Co. 534	Co. 544	Total.
	13·63	12·88	12·60	15·23	13·78	14·25	13·25	14·38	15·25	125·25
	17·08	13·50	12·83	13·25	15·50	10·85	13·00	11·30	11·10	118·41
	17·70	18·00	13·18	13·88	15·30	15·70	13·13	12·65	11·78	131·32
	18·35	15·00	10·88	13·50	16·50	7·88	11·75	13·45	14·13	121·44
	17·80	19·68	13·00	14·50	16·63	13·90	12·13	12·53	14·25	134·42
Total ..	84·56	79·06	62·49	70·36	77·71	62·58	63·26	64·31	66·51	630·84*

*Grand total.

Summary.

Average yield per Plot (1/40th acre in maunds).

	Co. 453	Co. 541	Co. 540	Co. 127	Co. 446	Co. 213
Average yield (maunds) per plot.	16·912	15·812	12·498	14·072	15·542	12·516
Maunds per acre ..	676·5	632·5	499·9	562·9	621·7	500·6
Per cent. ..	120·64	112·79	89·15	100·38	110·86	89·28

	Cos. 87	Co. 534	Co. 544	Average.	S. E.	C.D.	
Average yield (maunds) per plot.	12·652	12·862	13·302	14·019	0·787	2·267	Mahalanobis × Test satisfied at 1 per cent. level.
Maunds per acre ..	506·1	514·5	532·1	560·7	31·48	90·68	
Per cent. ..	90·25	91·75	94·89	100·0	5·61	16·17	

Cos. 453, 541 and 446 are significantly superior to Co. 213.

GOSTABEHARI PAL,

Agricultural Chemist to the Government of Bengal.

APPENDIX I.

SUGARCANE.

Sample Technique, 1940-41 (Dacca Farm).

Co. 508 (early cane) : 9 Replications.

One Block 1½ katta, *i.e.*, 3 lines.

Cane basis.

Date of analysis.	5 canes.			15 canes.			30 canes.			75 canes.			Pan.			Block No.
	Brix at 17 p.c.	Sucrose.	Purity.	Brix.	Sucrose.	Purity.	Brix.	Sucrose.	Purity.	Brix.	Sucrose.	Purity.	Brix.	Sucrose.	Purity.	
10-12-40 ..	91·91	18·80	94·43	19·38	19·08	95·96	19·70	18·67	94·77	19·34	18·14	93·79	19·67	18·34	93·24	I
10-12-40 ..	21·31	20·66	96·94	19·31	18·12	93·83	20·09	18·99	94·52	20·17	19·08	94·58	20·09	19·00	94·59	II
11-12-40 ..	19·67	18·65	94·43	20·42	19·75	96·62	20·17	19·75	97·91	20·17	19·39	96·11	20·17	19·02	94·30	III
11-12-40 ..	20·95	20·36	97·20	19·42	18·17	93·54	19·92	18·86	94·68	20·17	19·22	95·27	20·20	18·94	93·79	IV
12-12-40 ..	19·06	17·18	90·13	19·81	18·91	95·44	19·81	18·57	93·75	19·35	18·08	93·42	19·31	17·97	93·05	V
12-12-40 ..	20·13	19·07	94·72	19·38	17·83	92·00	19·88	18·49	93·02	20·44	18·33	89·68	19·94	19·27	96·63	VI
13-12-40 ..	20·70	19·99	96·55	20·20	19·57	96·89	19·95	18·52	92·82	19·95	18·76	94·04	19·95	19·01	95·28	VII
14-12-40 ..	19·67	18·84	95·80	20·17	19·58	97·05	19·92	18·93	95·02	19·92	19·29	96·85	20·17	19·42	96·26	VIII
14-12-40 ..	20·67	19·86	96·10	20·70	19·90	96·16	20·20	19·25	95·29	20·42	19·45	95·27	20·20	19·06	94·33	IX

Clump basis.

1 clump. 3 clumps. 6 clumps. 15 clumps. Pan.

Date of analysis.	5 canes.			15 canes.			30 canes.			75 canes.			Pan.			Block No.
	Brix at 17 p.c.	Sucrose.	Purity.	Brix.	Sucrose.	Purity.	Brix.	Sucrose.	Purity.	Brix.	Sucrose.	Purity.	Brix.	Sucrose.	Purity.	
10-12-40 ..	20·06	19·28	96·09	18·30	17·04	93·10	19·99	18·87	94·42	19·70	18·70	94·90	19·67	18·34	93·24	I
10-12-40 ..	18·13	15·87	87·51	19·38	17·94	92·55	20·38	19·49	96·58	19·84	18·50	93·27	20·09	19·00	94·59	II
11-12-40 ..	20·17	18·74	92·89	19·92	18·89	94·84	20·42	19·79	96·90	19·92	18·93	95·04	20·17	19·02	94·30	III
11-12-40 ..	18·70	17·19	91·94	20·67	20·24	97·92	19·70	18·50	93·90	20·67	19·68	95·21	20·20	18·94	93·76	IV
12-12-40 ..	20·85	20·12	96·52	19·81	18·85	95·17	19·81	18·73	94·56	20·13	19·02	94·48	19·31	17·97	93·05	V
12-12-40 ..	20·88	20·38	97·61	19·38	17·88	92·25	20·38	19·11	93·75	19·88	18·69	94·01	19·94	19·27	96·63	VI
13-12-40 ..	17·20	14·69	85·41	20·70	19·98	96·52	18·70	17·47	93·40	19·70	18·35	93·14	19·95	19·01	95·28	VII
14-12-40 ..	18·92	18·74	94·10	18·17	16·78	92·35	19·92	19·12	96·00	19·92	18·88	94·76	20·17	19·42	96·26	VIII
14-12-40 ..	21·17	20·72	97·86	20·92	20·23	96·69	20·92	20·27	96·88	19·92	18·59	93·34	20·20	19·06	94·33	IX

APPENDIX IIA.

Sugarcane (early) varieties.

Dacca Farm : Season 1940-41.

Serial No.	Variety.	Date of analysis.	Brix per cent. juice at 17·5°c.	Sucrose per cent. juice.	Reducing sugar per cent. juice.	Purity per cent. juice.	Total sucrose per cent. cane.	Fibre per cent. cane.	Yield per acre cane (mds).
1	D. S. 35	2-10-40 ..	16·70	14·91	0·87	89·28	..	..	..
		19-10-40 ..	17·31	15·69	0·63	90·64	..	..	..
		6-11-40 ..	18·77	17·66	0·40	94·08	..	..	..
		16-11-40 ..	19·06	17·92	0·34	94·01	13·69	15·44	346·2
2	Co. 281	2-10-40 ..	15·38	11·89	2·26	77·95	..	..	..
		19-10-40 ..	15·52	12·78	2·08	82·34	..	..	..
		6-11-40 ..	16·99	14·73	1·57	86·69	..	..	..
		21-11-40 ..	18·91	17·14	1·10	90·63	13·30	13·58	507·2
3	Co. 381	2-10-40 ..	17·17	14·97	1·26	87·18	..	..	..
		19-10-40 ..	16·56	14·49	1·26	87·50	..	..	..
		6-11-40 ..	19·24	18·49	0·34	96·10	..	..	..
		15-11-40 ..	20·51	19·77	0·38	96·39	14·19	16·01	372·3
4	Co. 508	2-10-40 ..	15·63	12·70	2·12	81·25	..	..	..
		19-10-40 ..	17·06	14·04	2·08	82·29	..	..	..
		6-11-40 ..	19·24	17·17	1·13	89·24	..	..	..
		20-11-40 ..	19·69	18·82	0·66	95·58	13·88	14·78	447·8
5	Co. 518	2-10-40 ..	16·38	13·16	1·54	80·34	..	..	..
		19-10-40 ..	18·60	16·62	1·15	89·35	..	..	..
		6-11-40 ..	16·77	14·90	1·23	88·84	..	..	..
		22-11-40 ..	20·38	19·60	0·37	96·17	13·85	17·67	443·8

APPENDIX II-B.

Sugarcane (Mid-Season) varieties.

Dacca Farm : Season 1940-41.

Serial No.	Variety.	Date of analysis.	Brix per cent. juice at 17·5°c.	Sucrose per cent. juice.	Reducing Sugar per cent. juice.	Purity per cent. juice.	Total sucrose per cent. cane.	Fibre per cent. cane.	Yield. per acre cane (mds.).
1	Co. 313 ..	28-11-1940	19·20	16·13	2·08	89·21			
		18-12-1940	21·15	19·03	1·53	89·97			
		4-1-1941	21·28	19·48	1·40	91·54			
		8-2-1941	23·59	23·01	0·59	97·79	16·85	13·72	690·6
2	Co. 407 ..	28-11-1940	17·95	15·02	2·16	83·67			
		18-12-1940	19·90	17·60	1·92	88·44			
		4-1-1941	21·05	19·21	1·15	91·25			
		10-2-1941	22·13	21·32	0·80	96·38	16·63	..	600·4
3	Co. 371 ..	28-11-1940	16·70	14·11	2·08	84·49			
		18-12-1940	16·88	14·42	2·08	85·42			
		4-1-1941	20·07	18·20	1·26	90·68			
		10-2-1941	21·88	20·70	0·91	94·83	16·16	..	764·6
4	Co. 326 ..	28-11-1940	17·45	13·93	2·36	79·82			
		18-12-1940	19·15	15·79	2·36	82·45			
		6-1-1941	19·40	15·99	2·16	82·42			
		12-2-1941	21·15	18·81	1·40	88·95	13·44	15·62	737·8
5	Co. 213 ..	29-11-1940	17·67	14·47	2·26	81·88			
		18-12-1940	18·15	14·80	2·88	81·54			
		6-1-1941	20·86	18·21	2·26	87·29			
		12-2-1941	21·40	19·78	1·33	92·42	14·95	13·92	868·2
6	Co. 511 ..	29-11-1940	17·92	14·80	2·17	82·59			
		18-12-1940	17·94	15·63	2·26	87·12			
		6-1-1941	20·38	19·44	0·62	95·38			
		11-2-1941	21·67	21·01	0·43	96·98	16·58	11·74	640·8
7	Co. 529 ..	29-11-1940	17·17	14·20	2·17	82·70			
		18-12-1940	19·97	17·50	1·67	87·63			
		6-1-1941	19·88	18·13	1·40	91·19			
		11-2-1941	21·34	19·46	1·30	91·21	15·43	14·48	611·2

APPENDIX II-C.

SUGARCANE (LATE) VARIETIES.

Dacca Farm: Season 1940-41.

Serial No.	Variety.	Date of analysis.	Brix per cent. juice at 17·5°c.	Sucrose per cent. juice.	Reducing sugar per cent. juice.	Purity per cent. juice.	Total sucrose per cent. cane.	Fibre per cent. cane.	Yield per acre cane (mds.).
1	Co. 331	19-12-40 ..	16·36	12·21	3·25	74·63	..	..	..
		20-1-41 ..	18·00	13·20	3·46	73·31	..	..	..
		28-2-41 ..	19·78	17·57	1·53	88·83	..	..	..
		20-3-41 ..	19·32	16·69	1·92	86·27	12·78	13·75	688·2
2	Co. 386	19-12-40 ..	19·61	16·46	2·36	83·93	..	..	..
		20-1-41 ..	21·00	18·63	1·44	88·73	..	..	..
		28-2-41 ..	21·28	19·56	0·70	91·91	..	..	..
		19-3-41 ..	22·59	21·59	0·52	95·56	16·08	15·65	619·0
3	Co. 421	19-12-40 ..	19·65	16·46	2·48	83·76	..	..	..
		20-1-41 ..	19·47	15·99	2·26	82·15	..	..	844·4
4	Co. 523	19-12-40 ..	18·09	15·42	2·16	85·24	..	..	..
		20-1-41 ..	19·97	17·88	1·04	89·51	..	..	..
		28-2-41 ..	21·81	20·71	0·47	94·95	..	..	..
		18-3-41 ..	22·33	21·14	0·69	94·67	15·87	14·46	885·6
5	Co. 527	19-12-40 ..	18·90	16·84	2·26	89·10	..	..	..
		20-1-41 ..	22·97	21·69	1·10	94·42	..	..	..
		28-2-41 ..	22·81	22·27	0·41	97·66	..	..	..
		17-3-41 ..	24·09	23·46	0·34	97·39	17·23	17·04	[illegible]

6	Co. 533	19-12-40	20·90	19·33	1·21	92·47			
		20-1-41	22·72	20·88	1·15	91·91			
		28-2-41	22·56	21·41	0·28	94·91			
		17-3-41	22·59	22·25	0·23	98·50	17·09	12·88	726·2
7	Co. 349	20-12-40	17·82	15·02	1·79	84·28			
		21-1-41	18·97	13·55	4·72	71·41			
		1-3-41	18·97	16·13	1·85	85·05			
		20-3-41	19·58	17·66	1·48	90·20	13·76	13·31	730·8
8	Co. 419	20-2-40	17·57	12·44	4·72	70·80			
		21-1-41	18·97	14·62	4·00	77·08			
		1-3-41	20·28	17·25	2·60	85·03			
		22-3-41	20·72	17·18	2·36	82·92	15·31	11·19	615·2
9	Co. 411	28-12-40	18·82	16·78	1·44	89·16			
		21-1-41	19·97	17·86	1·15	89·43			
		1-3-41	19·03	17·94	0·73	94·27			
		19-3-41	18·82	16·99	0·98	90·25	13·89	11·16	731·6
10	Co. 443	20-12-40	17·82	14·26	3·25	80·07			
		21-1-41	18·97	15·92	2·60	83·92			
		1-3-41	18·03	14·37	2·36	79·70			
		21-3-41	21·15	18·55	1·73	87·72	15·10	11·09	537·6
11	Co. 444	20-12-40	17·61	15·55	1·57	88·30			
		21-1-41	19·47	17·38	1·73	89·25			
		1-3-41	20·78	19·46	0·62	93·65			
		18-3-41	21·58	20·81	0·63	96·42	16·66	12·82	645·2
12	H. M. 607	26-12-40	15·86	12·82	2·60	80·83			
		21-1-41	19·97	13·34	2·88	79·78			
		1-3-41	19·53	16·87	1·44	86·38			
		21-3-41	15·63	11·38	3·06	72·83	9·78	15·60	652·4

APPENDIX III.

Results of Sugarcane Analysis, 1940-41.

District Farms.

Variety.	Date of analysis.	Sucrose per cent. juice.	Reducing sugar per cent. juice.	Purity per cent.	Outturn. Maunds per acre.	
Co. 213 ..	10-1-1941	11·39	0·57	82·69	410·0	Mainaguri Farm.
Co. 421 ..	10-1-1941	11·24	0·98	78·68	804·5	
	9-3-1941	16·64	0·54	94·45		
Co. 331 ..	10-1-1941	11·56	0·94	80·87	661·5	
	9-3-1941	13·24	0·90	87·63		
Co. 213 ..	13-1-1941	16·86	0·89	92·01	..	Rangpur Farm.
	9-3-1941	18·71	0·29	95·98	..	
Co. 421 ..	13-1-1941	14·02	0·57	86·03	..	
	9-3-1941	16·73	0·13	95·64	..	
Co. 331 ..	13-1-1941	13·04	1·57	82·57	..	
	9-3-1941	13·49	1·08	90·06	..	
Co. 213 ..	15-1-1941	17·10	0·44	91·72	..	Malda Farm.
Co. 421 ..	15-1-1941	19·04	0·41	94·81	..	
Co. 331 ..	15-1-1941	15·21	0·96	88·81	..	
Co. 213 ..	16-1-1941	12·03	0·74	85·24	909·0	Dinajpur Farm.
	10-3-1941	15·19	0·36	90·73		
Co. 421 ..	16-1-1941	17·05	0·38	94·36	1,080·2	
	10-3-1941	18·01	0·10	95·35		
Co. 331 ..	16-1-1941	15·01	0·52	87·89	919·0	
	10-3-1941	13·62	0·65	86·13		
Co. 213 ..	21-1-1941	13·98	0·93	89·15	1,138·3	Rajshahi Farm.
	9-3-1941	16·52	0·68	88·71		
Co. 421 ..	20-1-1941	14·94	1·06	90·93	1,196·1	
	9-3-1941	18·11	0·32	94·09		
Co. 331 ..	20-1-1941	16·65	0·84	94·33	1,184·3	
	9-3-1941	16·84	0·46	92·52		
Co. 407 ..	20-1-1941	16·69	0·69	93·24	1,157·0	
	9-3-1941	19·56	0·18	96·01	1,218·9	
Co. 386 ..	20-1-1941	17·33	0·34	95·48	..	
Co. 213 ..	10-1-1941	14·43	3·35	78·80	462·2	Bankura Farm.
Co. 421 ..	10-1-1941	15·90	2·26	82·21	843·5	
Co. 331 ..	10-1-1941	14·18	2·88	80·75	800·4	
Co. 213 ..	12-1-1941	15·62	0·81	92·53	997·7	Chinsurah Farm.
	12-3-1941	16·18	0·30	94·06		
Co. 421 ..	12-1-1941	18·82	0·15	97·66	901·1	
	12-3-1941	16·93	0·25	93·24		
Co. 331 ..	12-1-1941	15·63	0·61	91·99	845·7	
	12-3-1941	15·26	0·65	90·04		

Variety.		Date of analysis.	Sucrose per cent. juice.	Reducing sugar per cent. juice.	Purity per cent.	Outturn. Maunds per acre.	
Co. 213	..	13-1-1941 13-3-1941	16·96 20·80	0·52 0·32	91·28 97·30	287·0	Suri Farm.
Co. 421	..	13-1-1941 13-3-1941	15·96 19·76	0·39 0·43	87·07 95·53	340·7	
Co. 331	..	13-1-1941 13-3-1941	16·65 17·48	1·10 0·72	92·09 91·39	332·5	
Co. 421	..	14-1-1941 13-3-1941	19·96 19·23	0·25 1·36	97·22 91·09	607·5	Burdwan Farm.
Co. 331	..	14-1-1941 13-3-1941	18·71 18·55	0·69 0·57	95·80 95·40	727·5	
Co. 213	..	17-1-1941 8-3-1941	16·83 19·20	0·80 0·98	90·43 92·02	..	Krishnagar Farm.
Co. 421	..	17-1-1941 8-3-1941	17·61 21·13	0·86 1·00	92·05 94·02	..	
Co. 331	..	17-1-1941 8-3-1941	13·72 18·25	1·04 1·40	87·89 89·17	..	
Co. 213	..	19-1-1941 8-3-1941	16·37 16·88	0·87 0·52	91·91 91·22	675·2	Berhampore Farm.
Co. 421	..	19-1-1941 8-3-1941	14·89 17·73	0·75 0·44	91·29 88·26	767·5	
Co. 331	..	19-1-1941 8-3-1941	13·61 16·54	1·92 0·89	86·08 90·17	902·5	
Co. 386	..	19-1-1941 8-3-1941	15·85 20·64	0·94 0·20	91·56 95·27	727·0	
Co. 407	..	19-1-1941 8-3-1941	19·28 21·64	0·73 0·37	96·06 97·53	593·7	

APPENDIX IV.

Decomposition of Organic Carbon in Dacca Farm Soils.

Meggit's Plots.

Plot Nos.		Samples of soil collected before sowing of 1939 paddy crop.			Samples of soil collected in March, 1940 before sowing of 1940 paddy crop.			Remarks.
		Carbon per cent.	Nitrogen per cent.	Carbon Nitrogen.	Carbon per cent.	Nitrogen per cent.	Carbon Nitrogen.	
1	..	0·623	0·062	10·38	0·626	0·0630	9·94	Plot Nos. 1-5 paddy plants of 1939 crop completely harvested.
2	..	0·574	0·070	8·20	0·541	0·0574	9·41	
3	..	0·665	0·094	7·07	0·655	0·0644	10·17	
4	..	0·574	0·080	7·18	0·633	0·0602	10·51	
5	..	0·609	0·078	7·81	0·519	0·0602	8·62	
Average	..	..	..	8·13	0·595	0·061	9·73	
6	..	0·532	0·076	7·00	0·527	0·0532	9·91	Plot Nos. 6-10 tops only harvested and the stubbles ploughed in.
7	..	0·630	0·064	9·80	0·569	0·0602	9·45	
8	..	0·532	0·057	9·33	0·527	0·0574	9·18	
9	..	0·637	0·071	8·97	0·635	0·0658	9·65	
10	..	0·574	0·059	9·73	0·558	0·0560	9·96	
Average	..	..	..	8·96	0·563	0·058	9·63	

Reprint from Agricultural Report, 1939-40.

APPENDIX V.

Data regarding decomposition of Organic matter in soil.

	26th June 1940.					20th July 1940.					3rd August 1940.				
	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.
Soil alone pH 4·81 ..	5·58	15·4	0·127	1·184	9·3	5·12	16·9	0·104	1·108	10·6	4·9	18·8	0·112	1·00	9·0
Soil alone pH 5·06 ..	5·46	16·7	0·130	1·199	9·2	5·99	17·6	0·091	1·150	12·6	5·0	20·3	0·602	1·18	19·6
Soil+0·05 per cent. lime+10 per cent. compost. pH 6·14.	5·88	17·1	0·296	3·519	11·9	6·03	19·6	0·251	3·408	13·6	5·85	22·2	0·289	3·222	11·1
Soil+0·05 per cent. lime+10 per cent. compost. pH 6·14.	6·07	20·1	0·367	4·646	12·6	6·17	20·7	0·240	2·746	11·5	6·39	22·9	0·294	3·141	10·7
Soil+0·1 per cent. lime+10 per cent. compost. pH 6·45.	6·17	18·8	0·360	4·365	12·1	6·23	19·8	0·283	3·766	13·3	6·43	21·3	0·245	3·141	12·8
Soil+0·1 per cent. lime +10 per cent. compost. pH 6·40.	6·27	19·4	0·383	4·259	11·1	6·24	20·4	0·291	3·555	12·3	6·47	22·5	0·277	2·977	10·7
Soil+0·15 per cent. lime+10 per cent. compost. pH 6·8.	6·3	17·5	0·280	3·133	10·8	6·32	17·6	0·275	3·880	14·1	6·64	20·8	0·293	2·774	9·5
Soil+0·15 per cent. lime+10 per cent. compost. pH 6·6.	6·25	16·7	0·320	4·189	13·1	6·25	16·3	0·291	3·111	10·7	6·55	19·1	0·293	3·08	10·6
Soil—10 per cent. compost. ..	6·19	20·5	0·147	3·302	22·4	6·22	20·9	0·278	3·446	12·4	6·21	22·9	0·294	3·572	12·1
Soil+10 per cent. compost. ..	6·05	20·0	0·210	3·515	16·7	6·10	21·6	0·295	3·159	10·7	6·16	23·2	0·296	3·650	12·8

APPENDIX V—*contd.*

	17th August 1940.					31st August 1940.					14th September 1940.				
	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.
Soil alone pH 4·81 ..	5·17	18·6	0·093	1·142	12·3	5·16	22·8	0·0817	1·142	14·0	5·23	23·2	0·102	1·583	15·5
Soil alone pH 5·06 ..	4·9	21·3	..	1·156	..	4·93	23·1	·0702	1·142	16·2	4·998	20·9	0·094	1·312	14·0
Soil+0·05 per cent. lime +10 per cent. compost. pH 6·14	6·04	23·2	0·234	3·341	14·2	5·73	21·0	0·146	2·863	19·6	5·668	24·0	0·222	2·821	12·7
Soil+0·05 per cent. lime+10 per cent. compost. pH 6·14.	6·21	23·6	0·287	3·412	12·0	6·14	24·3	0·168	3·006	17·8	6·07	25·1	0·234	3·083	13·1
Soil+0·1 per cent. lime+10 per cent. compost. pH 6·45.	6·39	23·0	0·384	3·919	10·2	6·41	23·2	0·0963	3·658	37·9	6·238	23·8	0·231	3·577	15·5
Soil+0·1 per cent. lime+10 per cent. compost. pH 6·40.	6·46	20·8	0·294	3·508	12·0	6·29	24·5	..	3·946	..	6·439	23·7	0·265	3·068	11·6
Soil+0·15 per cent. lime+10 per cent. compost. pH 6·8.	6·66	21·1	0·166	3·55	21·4	6·39	22·2	0·167	4·110	24·6	6·471	23·5	0·255	3·076	12·06
Soil+0·15 per cent. lime+10 per cent. compost. pH 6·6.	6·58	19·4	0·155	3·181	20·5	6·41	19·6	0·245	5·03	20·6	6·505	..	0·219	4·326	19·6
Soil+10 per cent. compost. ..	6·14	20·4	0·158	3·196	20·2	6·14	23·5	0·162	4·787	29·5	6·17	23·3	0·129	3·508	27·2
Soil+10 per cent. compost. ..	6·25	21·1	..	3·592	..	6·00	21·7	..	3·892	..	6·14	23·4	0·235	2·861	12·1

APPENDIX V—*concld.*

	28th September 1940.					5th November 1940.					6th December 1940.				
	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.	pH.	Moisture per cent.	N_2 per cent.	Carbon per cent.	C/N.
Soil alone pH 4·81 ..	5·23	16·6	..	1·154	..	5·00	15·6	0·102	1·096	10·7	5·00	13·0	..	1·325	..
Soil alone pH 5·06 ..	5·1	21·9	0·102	1·098	10·7	4·53	19·6	0·110	1·081	7·8	4·66	17·7	0·086	1·339	15·5
Soil+0·05 per cent. lime+10 per cent. compost. pH 6·14.	5·67	21·1	0·248	3·182	12·9	5·50	20·3	0·153	3·23	21·1	5·60	18·8	0·0602	2·664	44·2
Soil+0·05 per cent. lime+10 per cent. compost. pH 6·14.	6·00	24·3	0·145	4·956	34·5	5·90	25·3	0·192	3·094	16·1	5·87	21·8	0·119	2·695	22·6
Soil+0·1 per cent. lime+10 per cent. compost. pH 6·45.	6·17	22·7	0·187	4·266	22·8	6·00	..	0·107	4·05	37·8	6·10	20·0	0·109	3·033	27·8
Soil+0·1 per cent. lime+10 per cent. compost. pH 6·40.	6·24	21·2	..	3·052	..	6·17	20·8	0·104	3·397	32·6	5·82	18·1	0·0642	3·200	49·8
Soil+0·15 per cent. lime+10 per cent. compost. pH 6·8.	6·64	23·0	0·121	4·488	37·09	6·24	23·7	0·275	3·457	12·5	6·10	22·4	..	3·068	..
Soil+0·15 per cent. lime+10 per cent. compost. pH 6·6.	6·41	18·0	0·150	3·470	23·1	6·43	16·2	0·304	3·77	12·4	6·25	13·3	0·062	2·436	39·3
Soil+10 per cent. compost. ..	6·20	21·7	0·252	4·209	17·7	6·07	20·2	0·106	3·047	28·7	6·00	20·3	..	2·716	..
Soil+10 per cent. compost. ..	6·00	20·6	0·268	4·789	17·8	6·07	21·4	0·314	2·911	9·2	5·00	20·3	0·053	3·129	59·04

APPENDIX VI.

Kasch Soil.

Pot culture experiment, 1940-41.

No. of pot.	Treated with.	Weight of grain.	Total weight of grain per treatment.	Weight of straw.	Total weight of straw per treatment.	Remarks.
		Gms.	Gms.	Gms.	Gms.	
1 2 3 4 5	Nil	Nil	Nil	Nil	Nil	L=Lime. Cd=Cowdung. Ni=Nicifos. Cu=Copper Sulphate. B=Bone.
6 7 8 9 10	L	30·1 38·6 27·9 16·3 36·1	149·0	48·0 62·0 53·0 38·0 72·0	273·0	
11 12 13 14 15	L+B	36·8 28·7 30·9 26·9 27·1	150·0	69·0 50·0 59·0 41·0 48·0	267·0	
16 17 18 19 20	L+Cd	22·3 27·1 36·8 26·5 21·5	134·2	49·0 47·0 55·0 42·0 46·0	239·0	
21 22 23 24 25	L+Ni.	29·3 17·7 52·5 34·0 31·5	165·0	50·0 26·0 60·0 75·0 44·0	255·0	
26 27 28 29 30	L+Cu.	43·0 34·5 19·3 54·7 16·3	167·8	52·0 32·0 35·0 70·0 20·0	209·0	
31 32 33 34 35	L+B+Cu	23·5 41·8 46·0 33·0 51·0	195·3	30·0 60·0 65·0 66·0 83·0	307·0	
36 37 38 39 40	L+Cd+Cu	32·3 38·2 38·0 43·5 52·7	204·7	62·0 77·0 44·0 60·0 52·0	295·0	
41 42 43 44 45	L+Ni+Cu	35·5 50·2 36·0 39·6 50·3	211·6	42·0 82·0 63·0 103·0 46·0	334·0	
46 47	Cu	Died 3	Nil 3	Nil 7·0	Nil 7·0	
48 49 50	Cu	Died	Nil	Nil	Nil	

APPENDIX VII.

CHEMICAL ANALYSIS OF LADUM PADDY STRAW.

Pot Culture Experiments with Kasch Soils at Dacca Farm. Season 1940-41.

Calculated on dry basis.

Sample No.	Pot's No.	Treated with.	Loss on ignition.	Acid in soluble residue.	Silica.	P_2O_5	K_2O	Fe_2O_3	CaO.	Mn_3O_4	MgO	Al_2O_3	N_2
S_1	6—10	L ..	79·82	10·87	·16	·27	2·34	·39	·57	·20	·49	·015	·91
S_2	11—15	L+B ..	78·54	12·11	·11	·24	2·22	·35	·64	·21	·54	·022	1·004
S_3	16—20	L+Cd ..	80·24	11·59	·19	·28	2·15	·30	·54	·21	·41	·023	·95
S_4	21—25	L+Ni ..	79·67	9·47	·13	·29	2·05	·35	·62	·19	·59	·011	1·19
S_5	26—30	L+Cu ..	77·81	13·52	·15	·25	2·08	·30	·72	·16	·42	·011	·92
S_6	31—35	L+B+Cu ..	82·40	10·31	·18	·21	2·04	·21	·51	·12	·59	·103	·68
S_7	36—40	L+Cd+Cu	80·46	12·79	·18	·23	2·53	·26	·44	·16	·24	·067	·55
S_8	41—45	L+Ni+Cu	79·15	11·10	·16	·24	2·26	·38	·65	·21	·52	·053	·73

L = Lime.
B = Bonemeal.
Cd = Cowdung.
Ni = Nicifos.
Cu = Copper Sulphate.

APPENDIX VIII.

Pot Culture Dacca Farm, 1940-41.

Effect of Lime and Bone on paddy Indrasail.

Actual yields of paddy (grain) and straw in grams and pH of soil.

5 Treatments with 4 cross-treatments 5 replications.

	Grain in grams.				Straw in grams.			
	B_0	B_1	B_2	B_3	B_0	B_1	B_2	B_3
L_0 ..	40	46	64	61	36	50	60	67
	6	52	65	51	10	50	60	87
	12	49	64	66	13	47	77	78
	10	42	67	65	11	49	73	70
	15	63	50	64	26	68	62	96
L_1 ..	18	58	70	68	19	62	67	87
	11	61	70	66	13	67	64	73
	11	55	60	58	11	55	67	58
	26	56	61	57	27	57	59	55
	16	50	60	43	19	58	59	72
L_2 ..	34	63	59	68	31	56	60	75
	19	60	52	55	20	57	53	61
	26	57	47	65	26	53	52	75
	38	39	57	61	40	54	55	60
	10*	60	64	55	29	52	70	81
L_3 ..	32	53	62	48	30	48	55	56
	23	49	47	25	25	41	44	32
	18	39	36	37	20	45	45	31
	35	36	30	62	31	37	33	66
	21	..	67	60	33	..	62	64
L_4 ..	28	45	22	43	29	36	29	45
	26	36	42	58	26	29	47	64
	24	50	30	29	26	47	36	36
	29	41	32	34	29	43	39	35
	30	35	30	37	32	37	24	41

*Eaten by rats.

pH of soil.

	B_0	B_1	B_2	B_3
L_0 ..	5·2	5·3	5·2	5·3
L_1 ..	5·2	5·2	5·4	5·2
L_2 ..	5·7	5·9	6·0	5·8
L_3 ..	6·4	6·6	6·4	6·8
L_4 ..	6·7	6·9	6·8	7·0

Per acre.

L_0 = No lime.
L_1 = 6 maunds lime.
L_2 = 24 maunds lime.
L_3 = 48 maunds lime.
L_4 = 72 maunds lime.
B_0 = No bone.
B_1 = 2 maunds bone.
B_2 = 4 maunds bone.
B_3 = 6 maunds bone.

PPENDIX IX.

CHEMICAL ANALYSIS OF SOIL.

Hydrochloric acid extract (on moisture free basis.)

	Kantabari, police-station Gobindaganj (Rangpur).					Daulatpur (Khulna) Agricultural Institute.	
	0"—6"	6"—12"	12"—18"	18"—24"	24r—30	0"—6"	6"—12"
Per cent.							
Loss on ignition ..	3·84	4·04	4·61	4·79	4·70	3·545	2·3[illegible]
Acid insoluble sand ..	86·03	79·30	73·14	72·02	71·51	82·704	84·1[illegible]
P_2O_5	0·034	0·049	0·064	0·006	0·065	0·139	0·158
K_2O	0·782	1·088	1·343	1·377	1·389	0·923	0·77[illegible]
Fe_2O_3	1·94	4·61	5·83	5·98	6·42	4·120	4·1[illegible]
Al_2O_3	6·30	10·22	13·87	14·52	14·701	6·841	6·17[illegible]
Mn_3O_4	0·096	0·071	0·251	0·196	0·171	0·075	0·05[illegible]
CaO	0·105	0·122	0·073	0·059	0·060	0·672	0·65[illegible]
MgO	0·38	0·48	0·55	0·58	0·62	0·552	0·48[illegible]
N_2	0·088	0·064	0·059	0·055	0·048	0·094	0·06[illegible]

MECHANICAL ANALYSIS OF SOIL.

International method.

Moisture ..	1·41	2·31	3·26	3·47	3·42	2·480	2·392
Coarse Sand ..	6·69	9·25	9·90	7·43	8·60	0·640	0·460
Fine Sand ..	44·18	38·72	31·96	30·83	31·68	40·41	39·13
Silt	26·25	25·15	20·90	21·55	20·40	35·00	37·25
Clay	18·25	25·35	35·00	36·25	35·00	18·00	18·75
Loss on solution ..	0·23	0·32	0·39	0·30	0·34	0·86	0·95

APPENDIX X.

Kasch Soil Charandip and Rampur (Cox's Bazar), Chittagong.

(Chemical Analysis).

Hydrochloric Acid extract on (Moisture free basis).

	Charandip.		Rampur.	
	0″—24″	24″—30″	0″—12″	0″—24″
Per cent.				
Loss in Ignition	6·348	7·075	7·540	7·170
Acid insoluble Residue ..	77·904	72·704	65·954	70·434
K_2O	1·547	2·227	1·958	1·887
CaO	0·154	0·154	..	0·210
MgO	0·693	0·652	..	0·914
Al_2O_3	8·904	9·780	13·569	12·375
Fe_2O_3	3·540	5·420	7·540	6·320
Mn_3O_4	0·010	0·025	0·045	0·025
P_2O_5	0·056	0·050	0·166	0·130
Nitrogen	0·114	0·085	0·153	0·146

Mechanical Analysis.

International method.

Moisture	4·208	4·720	5·580	4·380
Coarse sand	1·484	2·470	0·550	3·340
Fine sand	25·194	24·720	4·820	8·380
Silt	37·250	35·400	44·750	47·15
Clay	26·250	25·00	37·000	30·500
Loss on solution	1·050	2·500	1·090	0·97

APPENDIX XI.

Results of Physical Analysis of Soil from Harmati (Proposed Irrigation Scheme Area) and Mainaguri Farm on Moisture Free Basis, 1940-41.

	A		B				C	
	Soil from sandy area Khasmahal.		Soil from Khasmahal area near to the river.				Soil from Khasmahal area. Western side.	
	0″ 6″	6″ 12″	0″ 6″	6″ 12″	12″ 18″	18″ 24″	0″ 6″	6″ 12″
Maximum water holding capacity.	43·42	42·9	69·11	63·42	51·85	45·59	60·57	62·01
Moisture at the sticky point.	24·70	22·73	35·80	32·27	26·20	Sand	33·27	35·24
Rate of percolation of water per hour in c.c.	165	144	18·7	26·6	77	438	50·0	33·0
Permeability constant ..	$10{\cdot}92 \times 10^{-4}$	$9{\cdot}50 \times 10^{-4}$	$1{\cdot}25 \times 10^{-4}$	$1{\cdot}76 \times 10^{-4}$	$8{\cdot}9 \times 10^{-4}$	$28{\cdot}85 \times 10^{-4}$	$3{\cdot}29 \times 10^{-4}$	$2{\cdot}18 \times 10^{-4}$
Moisture ..	0·88	0·78	1·99	1·73	0·89	0·52	2·04	1·94
Coarse sand ..	49·51	50·38	20·85	21·29	19·96	27·13	23·94	19·80
Fine sand ..	31·55	30·81	25·77	32·70	57·12	63·57	27·79	29·11
Silt ..	12·25	10·65	33·70	27·90	14·90	6·40	28·75	31·25
Loss in solution ..	0·31	0·31	0·97	0·61	0·37	0·26	0·82	0·63
Clay ..	6·50	6·95	15·80	14·85	7·50	4·10	14·75	15·75

	D									
	Soils from cultivator's plot cultivated land.				Soils from Mainaguri Farm.					
					Sandy portion.		G. Block.		D. Block.	Low land.
	0″ 6″	6″ 12″	12″ 18″	18″ 24″	0″ 6″	6″ 12″	0″ 6″	6″ 12″	0″ 6″	6″ 12″
Maximum water holding capacity.	63·29	56·87	61·79	66·14	42·60	39·63	64·81	64·60	76·73	69·23
Moisture at the sticky point.	34·53	29·19	32·34	32·63	22·48	17·13	33·61	32·63	39·44	37·02
Rate of percolation of water per hour in c.c.	19·2	57·8	15·0	15·5	187	169	37·0	40·9	16·0	27·8
Permeability constant ..	$1{\cdot}26\times10^{-4}$	$3{\cdot}77\times10^{-4}$	$0{\cdot}98\times10^{-4}$	$1{\cdot}03\times10^{-4}$	$11{\cdot}37\times10^{-4}$	$11{\cdot}20\times10^{-4}$	$2{\cdot}45\times10^{-4}$	$2{\cdot}69\times10^{-4}$	$1{\cdot}06\times10^{-4}$	$1{\cdot}84\times10^{-4}$
Moisture ..	2·04	1·40	1·62	1·58	0·74	0·90	1·52	1·58	2·76	2·45
Coarse sand ..	11·94	21·46	12·02	10·03	27·39	24·49	2·1	1·05	2·20	2·41
Fine sand ..	31·56	42·83	32·40	30·39	54·88	56·59	48·46	49·86	29·87	33·18
Silt ..	33·5	21·75	35·0	43·5	11·0	12·5	35·5	38·0	48·65	47·25
Loss in solution ..	0·95	0·57	0·43	0·27	0·39	0·42	0·48	0·32	0·64	0·63
Clay ..	15·0	13·0	16·5	14·0	6·0	6·5	10·5	10·5	15·35	13·50

A—Too sandy. Percolation high. Not suitable for irrigation.
B.—Sand increases downwards. Below 12″ too sandy and percolation very high. Irrigation not advisable.
C.—Samples up to 12″ only have been taken and below 12″ sand increases. The top layers similar to B. Irrigation not advisable.
D.—Sand decreases downwards. Below 12″ percolation is low. Hence cultivation is possible.

The analytical data indicate the soil to be of a sandy nature with low retention capacity and high percolation. Borings on the spot show predominance of sand downwards in the areas represented by B and C above (proposed irrigation area). The area does not seem to be suitable for irrigation as can be gathered from the analytical figures.

APPENDIX XII.

Physico-Chemical constants of Cow's milk (Deshi breed).

Period of observation.	Cow No.	Age of calf.	Morning. Yield of milk. Average.	Range.	Specific gravity. Average.	Range.	Fat per cent. Average.	Range.	Solid, not fat, per cent. Average.	Range.
4-6-40 to 8-6-40 ..	1	4½ months	34·2±0·92	32—36	32·62±0·59	31·5—34·2	4·16±0·22	3·4—4·7	9·09±0·14	8·83—9·46
24-6-40 to 29-6-40 ..			28·0±1·46	24—32	31·93±0·68	29·6—34·8	4·40±0·02	4·3—4·7	9·00±0·17	8·40—9·72
15-7-40 to 20-7-40 ..			25·7±1·33	22—28	31·40±0·44	29·9—32·9	4·77±0·15	4·2—5·3	8·92±0·09	8·60—9·26
6-8-40 to 10-8-40 ..			24·6±0·60	24—27	30·08±0·27	29·5—31·0	5·50±0·36	4·1—6·1	8·76±0·10	8·39—8·99
26-8-40 to 31-8-40 ..			20·8±1·42	16—26	30·27±0·36	28·6—31·2	5·53±0·38	4·2—6·5	8·82±0·09	8·58—9·08
4-6-40 to 8-6-40 ..	2	2 months	24·8±0·80	24—28	31·14±0·40	29·9—32·0	3·60±0·83	3·1—4·6	8·64—0·06	8·53—8·76
24-6-40 to 29-6-40 ..			22·0±2·00	16—28	30·02±0·38	29·2—31·8	3·83±0·20	3·3—4·3	8·40±0·02	8·30—8·70
15-7-40 to 29-7-40 ..			16·7±0·42	16—18	30·40±0·31	29·4—31·6	3·75±0·11	3·3—4·1	8·49±0·09	8·17—8·84
6-8-40 to 10-8-40 ..			15·0±0·63	14—17	31·12±0·42	29·9—32·5	4·10±0·18	3·6—4·5	8·74±0·11	8·52—9·09
26-8-40 to 31-8-40 ..			17·0±1·44	14—24	30·77±0·33	29·6—31·7	4·37±0·15	4·1—5·0	8·71±0·02	8·54—8·91
4-6-40 to 8-6-40 ..	3	5 months	19·2±0·49	18—20	30·98±0·33	30·0—32·0	4·60±0·13	4·2—4·9	8·80±0·09	8·48—9·02
24-6-40 to 29-6-40 ..			13·3±1·33	8—16	30·63±0·18	30·0—31·3	4·75±0·16	4·2—5·3	8·73±0·05	8·60—8·91
15-7-40 to 20-7-40 ..			14·7±0·99	10—16	29·88±0·22	29·4—30·4	5·26±0·07	5·1—5·5	8·75±0·09	8·50—9·09
6-8-40 to 10-8-40 ..			11·2±0·58	10—13	29·56±0·20	29·0—30·1	5·40±0·13	4·9—5·7	8·61±0·06	8·45—8·77
26-8-40 to 31-8-40 ..			12·2±0·40	11—14	30·07±0·22	29·1—30·6	5·53±0·40	5·1—6·0	8·77±0·05	8·62—8·93
4-6-40 to 8-6-40 ..	4	4 months	19·0±0·60	17—20	30·14±0·20	29·5—30·7	5·28±0·04	5·2—5·4	8·73±0·05	8·58—8·88
24-6-40 to 29-6-40 ..			17·0±0·68	16—20	29·90±0·19	29·4—30·5	5·18±0·31	4·4—6·0	8·65±0·08	8·39—8·88
15-7-40 to 20-7-40 ..			15·0±0·86	12—16	29·63±0·58	28·7—32·2	5·88±0·09	5·5—6·1	8·72±0·15	8·47—9·41
6-8-40 to 10-8-40 ..	5	4 months	34·8±4·08	26—48	29·76±0·40	28·8—30·8	5·64±0·19	4·9—5·9	8·71±0·08	[illegible]
[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

4-6-40 to 8-6-40 ..	6	5 months	27·4±0·60	25—28	32·12±0·56	30·5—34·0	3·84±0·14	3·5—4·3	8·94±0·15	8·52—9·44
24-6-40 to 29-6-40 ..			26·8±1·74	20—30	32·12±0·79	30·9—34·5	4·44±0·30	3·3—5·1	9·06±0·16	8·58—9·42
15-7-40 to 20-7-40 ..			23·5±2·00	16—29	31·28±0·59	28·4—32·5	4·78±0·27	3·6—5·4	8·75±0·24	7·96—9·16
6-8-40 to 10-8-40 ..	7	2 months	37·2±3·19	26—48	37·50±0·27	30·6—32·1	3·26±0·14	2·9—3·8	8·71±0·09	8·47—8·97
26-8-40 to 31-8-40 ..			37·3±1·33	32—40	30·77±0·39	29·0—31·6	4·17±0·38	3·2—5·4	8·59±0·07	8·39—8·82
18-11-40 to 23-11-40 ..	8	7 months	11·2±0·91	8—14	27·43±0·48	25·3—28·5	8·77±0·41	7·5—10·2	8·76±0·55	8·51—8·91
9-12-40 to 14-12-40 ..	9	..	25·8±0·75	24—28	33·98±0·19	33·4—34·6	4·02±0·08	3·8—4·2	9·34±0·13	8·68—9·56
13-1-41 to 17-1-41 ..			24·0	24	29·67±0·11	29·0—31·0	4·70±0·15	4·3—5·2	8·51±0·26	8·31—8·75
18-11-40 to 23-11-40 ..	10	9 months	8·5±0·34	8—10	28·50±0·45	28·3—29·6	7·02±0·28	6·2—7·9	8·67±0·10	8·48—8·97
9-12-40 to 14-12-40 ..			11·7±0·33	10—12	28·10±0·17	27·5—28·6	8·27±0·23	7·2—8·3	8·82±0·06	8·66—8·99
13-1-41 to 17-1-41 ..			8·0	8	25·40±0·24	25·0—26·0	8·32±0·48	7·5—10·2	8·17±0·10	7·95—8·43
18-11-40 to 23-11-40 ..	11	17 days	26·0±3·27	18—40	32·07—0·48	30·6—33·3	3·92±0·24	3·2—4·5	8·92±0·14	8·45—9·37
9-12-40 to 14-12-40 ..			28·3±1·79	24—36	30·47±1·08	25·1—32·1	4·45±0·26	3·2—5·1	8·65±0 28	7·32—9·14
13-1-41 to 17-1-41 ..			40·0	40	27·60±0·68	25·0—29·0	5·52±0·24	4·8—6·3	8·14±0·14	7·65—8·53
18-11-40 to 23-11-40 ..	12		27·0±1·61	24—32	32·32±0·63	28·6—32·5	4·43±0·47	3·1—6·5	8·83±0·08	8·59—9·10
9-12-40 to 14-12-40 ..			25·5±0·62	24—28	29·93±0·93	29·1—31·0	5·83±0·31	4·9—6·0	8·79±0·02	8·72—8·87
13-1-41 to 17-1-41 ..			21·2±1·02	18—24	27·80±0·20	27·0—28·0	5·38±0·21	4·6—5·8	8·17±0·05	8·05—8·28
18-11-40 to 23-11-40 ..	13		37·3±2·67	24—40	31·51±0·34	30·6—31·7	3·90±0·34	2·5—4·7	8·81±0·04	8·64—8·97
9-12-40 to 14-12-40 ..			26·0±2·07	22—36	31·71·±0 27	30·9—32·6	5·12±0·12	4·8—5·5	9·09±0·06	8·87—9·27
18-11-40 to 23-11-40 ..		Composite	..	..	30·73±0·36	29·5—31·6	4·48±0·15	4·0—5·0	8·72±0·06	8·51—8·84
9-12-40 to 14-12-40			..	..	29·17±0·38	27·8—30·0	5·18±0·21	4·9—5·9	8·57±0·06	7·97—9·44
13-1-41 to 17-1-41 ..			..	..	27·40±0·60	26·0—29·0	4·80±0·17	4·4—5·3	7·95±0·17	7·54—8·41
4-6-40 to 8-6-40 ..		Composite	..	..	31·40±0·19	30·7—31·8	4·24±0·11	4·0—4·6	8·77±0·05	8·64—8·91
24-6-40 to 29-6-40 ..			..	..	30·93±0·23	30·1—31·2	4·58±0·08	4·3—4·8	8·77±0·07	8·52—8·96
15-7-40 to 20-7-40 ..			..	..	30·60±0·29	29·4—31·6	4·87±0·06	4·6—5·0	8·76±0·07	8·47—9·02
6-8-40 to 10-8-40 ..			..	..	29·50±0·37	28·8—30·9	4·82±0·08	4·7—5·1	8·48±0·09	8·28—8·81
26-8-40 to 31-8-40 ..			..	..	30·28±0·30	29·1—31·2	4·43±0·10	4·1—4·7	8·60±0·09	8·30—88·8

Period of observation.	Cow No.	Age of calf.	Evening. Yield of milk. Average.	Yield of milk. Range.	Specific gravity. Average.	Specific gravity. Range.	Fat per cent. Average.	Fat per cent. Range.	Solid, not fat, per cent. Average.	Solid, not fat, per cent. Range.
4-6-40 to 8-6-40 ..	1	4½ months	18·8±2·36	20—30	31·23±0·31	30·3—31·6	5·40±0·66	4·9—5·9	9·03±0·06	8·89—9·14
24-6-40 to 29-6-40 ..			20·3±2·44	10—28	30·43±0·43	29·2—31·6	5·30±0·44	3·5—6·6	8·81±0·07	8·52—9·02
15-7-40 to 20-7-40 ..			18·0±0·52	16—20	30·38±0·19	30·1—31·3	5·92±0·12	5·6—6·5	8·92±0·05	8·78—9·12
6-8-40 to 10-8-40 ..			15·5±0·50	14—16	29·60±0·74	28·6—31·8	6·98±0·11	6·8—7·3	8·94±0·18	8·67—9·45
26-8-40 to 31-8-40 ..			15·6±0·75	14—18	28·94±0·19	28·3—29·4	6·94±0·09	6·8—7·2	8·77±0·05	8·64—8·86
4-6-40 to 8-6-40 ..	2	2 months	16·5±0·06	14—18	29·83±0·39	29·1—30·6	4·80±0·20	4·3—5·2	8·56±0·09	8·38—8·79
24-6-40 to 29-6-40 ..			11·0±0·58	8—12	28·90±0·19	28·3—29·2	5·15 ±0·12	4·6—5·4	8·38±0·06	8·13—8·52
15-7-40 to 29-7-40 ..			10·3±0·80	8—12	28·50±0·06	28·0—29·0	5·73±0·11	5·4—6·2	8·41±0·03	8·30—8·53
6-8-40 to 10-8-40 ..			10·0±2·04	7—16	30·35±1·30	27·6—33·5	5·60±0·48	4·7—6·7	8·58±0·11	8·38—8·89
26-8-40 to 31-8-40 ..			10·0	10	31·22±0·47	29·8—32·7	4·80±0·16	4·2—5·3	8·89±0·12	8·61—9·30
4-6-40 to 8-6-40 ..	3	5 months	12·0	12	31·38±0·26	30·9—32·0	5·30±0·21	4·9—5·9	9·05±0·10	8·87—8·32
24-6-40 to 29-6-40 ..			10·7±0·67	8—12	29·92±0·36	28·2—30·4	5·53±0·42	3·5—6·2	8·73±0·13	8·26—8·98
15-7-40 to 20-7-40 ..			9·3±0·67	8—12	29·05—0·03	29·0—29·2	6·42±0·10	6·1—6·7	8·80±0·09	8·65—9·23
6-8-40 to 10-8-40 ..			6·8±0·48	6—8	28·58±0·21	28·0—29·0	6·70±0·11	6·5—7·0	8·62±0·04	8·54—8·71
26-8-40 to 31-8-40 ..			8·2±0·20	8—9	29·06±0·27	28·4—29·9	6·70±0·08	6·5—7·1	8·74±0·08	8·56—8·98
4-6-40 to 8-6-40 ..	4	4 months	10·8±0·71	9—12	29·90±0·42	29·2—30·9	5·95±0·32	5·0—6·4	8·79±0·18	8·44—9·15
24-6-40 to 29-6-40 ..			8·8±0·49	8—10	28·82±0·23	28·2—29·2	6·52±0·21	5·8—7·0	8·65±0·02	8·47—8·84
15-7-40 to 20-7-40 ..			8·8±0·65	8—12	29·10±0·48	28·0—31·1	7·13±0·10	6·9—7·5	8·82±0·09	8·58—9·08
6-8-40 to 10-8-40 ..	5	4 months	27·5±2·06	24—32	29·50±0·61	28·1—31·1	6·30±0·37	5·3—7·1	8·78±0·12	8·45—8·98
26-8-40 to 31-8-40 ..			23·6±1·03	20—26	28·98±0·23	28·2—29·6	5·76±0·12	5·5—6·1	8·54±0·04	8·41—8·92
4-6-40 to 8-6-40 ..	6	5 months	18·3±4·13	12—30	32·98±0·50	31·6—33·9	4·60±0·13	4·3—4·9	9·26±0·03	8·75—9·51
24-6-40 to 29-6-40 ..			20·3±3·03	10—28	32·00±0·56	29·7—33·9	5·07±0·07	4·3—5·4	9·17±0·14	8·64—9·60

6-8-40 to 10-8-40 ..	7	2 months	28·0±2·31	24—32	28·93±0·77	27·5—31·1	5·45±0·44	4·7—6·6	8·47±0·14	8·24—8·88
26-8-40 to 31-8-40 ..			28·4±2·23	22—32	28·70±0·26	28·2—29·5	5·62±0·39	4·7—6·8	8·46±0·05	8·35—8·64
18-11-40 to 23-11-40 ..	8	7 months	8·8±0·83	6—12	27·75±0·80	24·9—30·3	9·08±0·82	7·1—11·5	8·88±0·87	8·66—9·14
9-12-40 to 14-12-40 ..	9	..	15·3±1·23	12—20	31·70±0·59	30·4—33·9	6·30±0·22	5·7—7·0	9·41±0·15	8·97—9·85
13-1-41 to 17-1-41 ..			15·0±1·00	12—16	29·40±0·87	28·0—32·0	6·84±0·58	5·4±8·3	8·86±0·15	8·76—9·22
18-11-40 to 23-11-40 ..	10	9 months	5·8±0·54	4—8	28·50±0·24	28·0—29·4	7·23±0·22	6·5—7·8	8·71±0·06	8·51—8·92
9-12-40 to 14-12-40 ..			8·0	8	27·30±0·47	26·2—29·4	10·07±0·24	9·4—11·0	8·98±0·10	8·70—9·45
13-1-41 to 17-1-41 ..			5·0±0·58	4—6	25·60±0·40	25·0—27·0	9·00±0·27	8·1—9·6	8·49±0·08	8·13—8·57
18-11-40 to 23-11-40 ..	11	17 days ..	21·3±2·86	16—32	31·03±0·64	28·3—32·5	5·27±0·55	3·1—7·0	8·91±0·08	8·62—9·19
9-12-40 to 14-12-40 ..			22·2±2·14	15—26	29·68±0·57	28·4—32·2	5·30±0·30	4·2—6·0	8·63±0·11	8·26—9·03
13-1-41 to 17-1-41 ..			27·0±1·73	24—32	27·80±0·20	27·0—28·0	6·44±0·12	5·3—7·4	8·32±0·14	7·95—8·62
18-11-40 to 23-11-40 ..	12	..	24·2±2·20	18—34	29·58±1·71	28·3—30·3	5·60±0·37	4·1—6·6	8·65±0·08	8·51—8·99
9-12-40 to 14-11-40 ..			23·8±1·97	16—28	28·70±0·66	26·1—30·3	7·71±0·65	6·5—10·5	8·86±0·23	8·23—9·82
13-1-41 to 17-1-41 ..			17·0±0·77	16—20	27·20±0·67	25·0—29·0	6·64±0·56	4·9—8·1	8·27±0·26	8·01—8·41
18-11-40 to 23-11-40 ..	13	..	35·33±3·20	20—40	31·37±0·40	30·2—32·6	4·90±0·12	4·6—5·4	8·96±0·08	8·72—9·21
9-12-40 to 14-12-40 ..			24·00±1·46	18—28	31·13±0·28	30·4—31·8	5·27±0·10	5·0—5·6	8·97±0·06	8·79—9·16
18-11-40 to 23-11-40 ..	..	Composite	..	..	27·98±0·83	24·9—30·2	5·89±0·15	5·3—6·4	8·36±0·19	7·53—8·91
9-12-40 to 14-12-40 ..			..	..	27·98±1·58	20·3—31·2	6·57±0·29	5·5—7·6	8·45±0·43	6·32—9·16
13-1-41 to 17-1-41 ..			..	..	27·80±0·37	27·0—29·0	6·44±0·20	5·9—7·2	8·38±0·07	8·21—8·63
4-6-40 to 8-6-40 ..	..	Composite	..	..	31·15±0·24	30·6—31·6	4·85±0·09	4·7—5·1	8·85±0·08	8·69—9·06
24-6-40 to 29-6-40 ..			..	..	29·78±0·34	28·4—30·4	5·68±0·07	5·8—6·0	8·70±0·07	8·44—8·88
15-7-40 to 20-7-40 ..			..	..	29·80±0·08	29·0—30·4	6·00±0·07	5·8—6·3	8·79±0·05	8·60—8·94
6-8-40 to 10-8-40 ..			..	..	29·14±0·17	27·6—31·0	5·46±0·28	4·8—5·8	8·52±0·11	8·18—8·88
26-8-40 to 31-8-40 ..			..	..	29·12±0·29	28·2—30·0	5·50±0·07	4·8—6·2	8·52±0·06	8·35—8·77

APPENDIX XIII.

Chemical Analysis of Cow's Milk (Cow).

Serial No.	Date.	Total Protein.	Casein.	Other proteins.	Ash.	P_2O_5	CaO.	Lactose.	Remarks.
1	7-6-1940 ..	3·469	2·907	0·562	0·731	0·238	0·191	5·2	1 Cow No.
2	7-6-1940 ..	3·249	2·632	0·617	0·692	0·210	0·191	5·5	2
3	7-6-1940 ..	3·562	2·911	0·651	0·741	0·247	0·300	5·5	3
4	7-6-1940 ..	3·562	2·859	0·703	0·723	0·243	0·246	5·5	4
5	7-6-1940 ..	3·705	2·962	0·743	0·693	0·240	0·355	5·4	5
6	7-6-1940 ..	3·553	2·909	0·644	0·634	0·240	0·355	5·10	Composite
7	29-6-1940 ..	3·003	2·350	0·653	0·728	0·239	0·179	5·1	1
8	29-6-1940 ..	3·069	2·623	0·446	0·657	0·194	0·186	4·9	2
9	29-6-1940 ..	3·514	2·965	0·549	0·659	0·242	0·193	4·9	3
10	29-6-1940 ..	3·240	2·824	0·416	0·659	0·221	0·179	5·3	4
11	29-6-1940 ..	3·637	3·073	0·564	0·710	0·251	0·186	5·3	5
12	29-6-1940 ..	3·286	2·862	0·424	0·638	0·213	0·165	5·2	Composite
13	20-7-1940 ..	3·378	2·775	0·603	0·702	0·246	0·178	4·9	1
14	20-7-1940 ..	3·097	2·506	0·501	0·685	0·194	0·199	5·1	2
15	20-7-1940 ..	3·407	2·741	0·666	0·759	0·234	0·186	5·0	3
16	20-7-1940 ..	3·428	2·652	0·776	0·682	0·240	0·166	5·2	4
17	20-7-1940 ..	3·420	2·874	0·546	0·722	0·234	0·208	5·3	5
18	20-7-1940 ..	3·339	2·803	0·536	0·730	0·240	0·189	5·0	Composite
19	12-8-1940 ..	3·424	2·873	0·551	0·737	0·186	0·179	5·0	1
20	12-8-1940 ..	3·605	2·912	0·793	0·705	0·170	0·171	4·9	2
21	12-8-1940 ..	3·762	3·322	0·440	0·714	0·211	0·171	5·0	3
22	12-8-1940 ..	3·399	2·939	0·460	0·763	0·229	0·178	5·0	4
23	12-8-1940 ..	2·780	2·311	0·467	0·724	0·214	0·178	5·0	5
24	12-8-1940 ..	3·084	2·701	0·383	0·647	0·203	0·179	4·6	Composite
25	31-8-1940 ..	3·376	2·992	0·384	0·717	0·215	0·202	5·4	1
26	31-8-1940 ..	3·383	0·990	0·303	0·707	0·185	0·181	4·9	2
27	31-8-1940 ..	3·854	3·336	0·518	0·723	0·223	0·201	4·9	3
28	31-8-1940 ..	3·339	2·997	0·342	0·760	0·213	0·187	4·7	4
29	31-8-1940 ..	2·807	2·331	0·476	0·702	0·234	0·189	5·0	5
30	31-8-1940 ..	2·997	Milk	Coagulated.				4·9	Composite
31	23-11-1940 ..	3·989	3·089	0·900	0·750	0·225	0·245	4·8	7
32	23-11-1940 ..	3·991	3·290	0·701	0·708	0·204	0·221	4·8	8
33	23-11-1940 ..	3·789	3·032	0·757	0·794	0·250	0·192	5·1	9
34	23-11-1940 ..	3·391	3·141	0·250	0·776	0·229	0·213	4·7	10
35	23-11-1940 ..	3·188	2·907	0·281	0·777	0·257	0·227	5·2	11
36	23-11-1940 ..	3·373	2·613	0·760	0·725	0·242	0·219	4·9	Composite
37	15-12-1940 ..	3·655	2·966	0·689	0·684	0·219	..	4·6	7
38	15-12-1940 ..	4·532	3·245	1·287	0·708	0·245	..	4·8	8
39	15-12-1940 ..	3·496	2·763	0·733	0·765	0·259	..	4·7	9
40	15-12-1940 ..	2·540	2·593	0·947	0·738	0·245	..	4·2	10
41	15-12-1940 ..	3·535	2·420	1·115	0·791	0·264	..	4·3	12
42	15-12-1940 ..	3·489	2·660	0·829	0·694	0·232	..	4·9	13

APPENDIX XIV.

YIELD OF NAPIER GRASS.

Dacca Farm—Season 1940-41.

In lbs. per plot of 1/50th acre.

With Lime.

Block No.	A	B	C	D.	E	F	G	
1 ..	348	297	248	248	207	235	192	Period—28th February 1940 to 30th May 1940.
2 ..	253	261	202	218	95	218	204	
3 ..	278	256	256	215	136	189	132	
4 ..	253	251	252	236	199	226	218	
1 ..	540	530	457	360	269	464	405	Period—31st May 1940 to 29th July 1940.
2 ..	567	510	435	278	163	372	446	
3 ..	564	478	411	372	135	322	338	
4 ..	479	432	405	336	240	338	384	
1 ..	399	397	341	346	233	365	311	Period—1st August 1940 to 27th September 1940.
2 ..	339	339	209	237	140	287	228	
3 ..	376	335	326	320	104	284	250	
4 ..	372	306	339	332	184	314	342	
1 ..	165	128	111	100	73	120	92	Period—30th September 1940 to 24th December 1940.
2 ..	120	123	110	86	42	106	97	
3 ..	186	131	111	126	33	91	80	
4 ..	124	121	129	112	65	106	122	

Without Lime.

Block No.	A	B	C	D	E	F	G	
1 ..	291	336	280	235	156	195	216	Period—28th February 1940 to 30th May 1940.
2 ..	274	285	302	214	282	152	181	
3 ..	259	239	197	225	151	189	143	
4 ..	252	263	269	230	219	259	250	
1 ..	475	480	518	338	160	271	419	Period—31st May 1940 to 29th July 1940.
2 ..	353	570	458	308	343	200	345	
3 ..	441	483	432	370	142	325	291	
4 ..	507	425	405	294	201	330	320	
1 ..	368	341	385	257	136	201	288	Period—1st August 1940 to 27th September 1940.
2 ..	272	358	307	171	208	155	218	
3 ..	310	289	263	265	140	220	184	
4 ..	259	276	287	264	171	305	315	
1 ..	148	146	164	132	63	97	142	Period—30th September 1940 to 24th December 1940.
2 ..	133	176	144	91	128	62	90	
3 ..	139	128	105	120	53	99	85	
4 ..	93	111	108	88	60	83	138	

A—Nicifos.

B—Ammonium Sulphate.

C—Rape cake.

D—Farmyard Manure.

E—Control.

F—Water Hyacinth (Changed into—Nicifos (1/3 N_2) plus Farmyard Manure (2/3 N_2). Since 31st May 1940.

G—Ammonium Sulphate (1/3 N_2 in May) plus Farmyard Manure (2/3 N_2 in October).

N.B.—Nitrogen used to be applied twice during the season (100 lbs. in all). Since (1940-41) the application of 100 lbs. N_2 is being done thrice instead of twice during the full season at—

40 lbs. N_2 in May.

30 lbs. N_2 in July.

30 lbs. N_2 in September.

APPENDIX XV.

Results of Variety Manurial Experiments on Transplanted Paddy, Chinsurah Farm, 1940-41.

Area of each sub-plot 1/60th of an acre.

Layout—Main treatments (manures).

I	O	Ni	CD	As+S
II	CD	As+S	Ni	O
III	Ni	O	As+S	CD
IV	As+S	CD	O	Ni
V	As+S	CD	O	Ni
VI	O	NI	CD	As+S
VII	CD	As+S	Ni	O
VIII	Ni	O	As+S	CD

O = Control.
Ni = Nicifos.
CD = Cowdung.
As+S = Amonium Sulphate and Superphosphate.

Sub-Treatment (varieties).

I	L	C	J	B	L	C	B	J	L	J	C	B	C	J	B	L
II	J	B	L	C	B	J	L	C	B	C	L	J	B	L	C	J
III	C	J	B	L	J	B	C	L	C	B	J	L	J	B	L	B
IV	B	L	C	J	C	L	J	B	J	L	B	C	L	C	J	C
V	L	C	B	J	C	B	J	L	C	L	B	J	C	J	L	B
VI	C	J	L	B	L	C	B	J	B	C	J	L	J	L	B	C
VII	J	B	C	L	J	L	C	B	J	B	L	C	L	B	C	J
VIII	B	L	J	C	B	J	L	C	L	J	C	B	B	C	J	L

L = Latisail.
C = Chinsurah II.
J = Jhingasail.
B = Badkalamkati.

Yield of paddy in seers per plot.

I	16·25	15·75	18 00	8·56	21·75	20·25	15·31	21·00	18·00	16·50	16·25	11·88	15·63	16·13	9·94	19·00
II	20·50	8·69	19·00	19·25	14·81	21·25	19·75	19·88	14·38	18·75	21·00	17·75	9·94	15·25	13·88	15·63
III	19·75	17·88	12·25	20·75	14·25	9·13	12·75	14·13	18·75	11·25	19·50	19·88	20·00	8·94	17·63	19·50
IV	11·19	19·13	19·38	19·63	18·75	17·25	16·75	13·81	17·00	14·50	11·69	16·63	21·38	20·75	21·13	14·50
V	22·75	20·00	13·88	19·75	20·88	14·06	20·38	23·00	15·25	14·50	10·81	15·63	17·25	20·88	22·00	14·50
VI	17·88	18·00	17·00	11·81	23·25	19·00	15·31	20·75	11·44	17·50	17·63	19·88	18·50	20·25	11·56	20·00
VII	16·50	10·75	19·75	23·50	21·00	22·13	22·38	15·81	19·00	14·00	20·50	19·00	14·38	9·00	14·88	16·50
VIII	9 13	20·88	20·63	23·50	11·06	16·13	15·50	18·06	17·13	17·50	19·75	11·81	8·50	17·75	16·00	16·75

APPENDIX XVI.

NICIFOS II MANURIAL EXPERIMENT, CHINSURAH FARM—SEASON 1940-41.

Crop—paddy Chinsurah II.

Plan and yield in maunds of paddy $\frac{\text{Crain}}{\text{Straw}}$ per plot 1/10th acre.

1 Ni	0 Ni	3 Ni	2 Ni	2·419 / 2·894	2·344 / 2·781	3·237 / 4·037	2·625 / 3·631
2 Ni	3 Ni	0 Ni	1 Ni	2·944 / 3·600	2·787 / 4·369	1·756 / 2·437	2·469 / 3·350
0 Ni	1 Ni	2 Ni	3 Ni	2·294 / 2·731	2·650 / 3·144	3·125 / 3·687	3·219 / 4·194
3 Ni	2 Ni	1 Ni	0 Ni	3·075 / 4·106	3·069 / 4·031	2·694 / 3·231	2·256 / 2·581

$\frac{\text{Numerator}}{\text{Denominator.}}$ $\frac{\text{Grain}}{\text{Straw.}}$

0 Ni = Control.
1 Ni = 15 lbs N.
15 lbs. P_2O_5
2 Ni = 30 lbs. N.
30 lbs. P_2O_5
3 Ni = 45 lbs. N.
45 lbs. P_2O_5.

APPENDIX XVII.

GREEN MANURE EXPERIMENT ON TRANSPLANTED PADDY AT THE SURI FARM—SEASON 1940-41.

Plan and yield in lbs. per plot of 1/40th acre.

$\frac{\text{Grains.}}{\text{Straw.}}$

East.

G/21	C	X	D	S	22·75 / 30·63	14·94 / 24·00	12·44 / 23·75	14·69 / 25·00
G/22	D	S	C	X	17·81 / 35·50	18·38 / 30·25	21·06 / 34·50	16·94 / 24·75
G/23	S	D	X	C	12·50 / 22·75	15·31 / 29·25	17·00 / 26·75	11·94 / 24·00
G/24	X	C	S	D	19·94 / 32·00	16·63 / 26·50	21·19 / 33·50	13·44 / 30·00
L/6	X	C	S	D	31·94 / 36·00	35·06 / 37·75	28·81 / 32·50	27·88 / 33·25
L/7	S	D	X	C	33·88 / 36·00	26·75 / 33·00	18·69 / 22·25	29·31 / 41·00
L/8	D	S	C	X	19·19 / 28·25	23·88 / 27·50	27·44 / 35·00	23·06 / 26·50
L/9	C	X	D	S	13·94 / 21·50	7·31 / 11·75	6·56 / 11·50	8·38 / 16·00

$\frac{\text{Numerator}}{\text{Denominator.}} = \frac{\text{Grains}}{\text{Straw.}}$

Remarks :—C = Cowpea.
S = Sunn-hemp.
D = Dhaincha.
X = Control.

The Blocks G and L are in different levels.
The plots G/21, G/22, G/23 and G/24 are terraced plots at different levels.
Similarly the plots L/6, L/7, L/8 and L/9 are terraced plots at different levels.

APPENDIX XVIII.

Sugarcane Manurial Experiment Ratoon crop Co. 213.

Dacca Farm—Season 1940-41.

Each plot= $^1/_{15}$TH. acres.

7 trienches in each plot.

N

Date of analysis.	6-2-41.	18-2-41.	19-2-41.	20-2-41.	21-2-41.	22-2-41.
	B	A	D	C	F	E
Cane (maunds per plot) ..	9·34	9·00	8·63	7·25	8·00	8·50
Gur (maunds per plot) ..	1·15	1·23	1·05	0·90	0·80	1·03
Sucrose	18·97	19·78	19·82	20·68	21·49	20·87
	F	C	E	A	B	D
Cane (maunds per plot) ..	10·80	10·00	11·13	7·25	9·00	10·00
Gur (maunds per plot) ..	1·15	1·28	1·43	0·98	1·03	1·08
Sucrose	19·18	19·09	19·78	20·40	20·26	20·05
	D	B	F	E	A	C
Cane (maunds per plot) ..	10·00	10·63	10·50	10·38	9·00	10·25
Gur (maunds per plot) ..	1·23	1·25	1·43	1·03	1·00	1·35
W Sucrose	20·21	19·17	19·87	19·91	20·83	20·34 E
	A	E	C	B	D	F
Cane (maunds per plot) ..	8·00	11·50	9·00	8·00	10·25	10·25
Gur (maunds per plot) ..	1·40	1·25	1·28	1·00	1·28	1·30
Sucrose	20·53	19·83	19·92	20·19	19·81	20·38
	C	F	B	D	E	A
Cane (maunds per plot) ..	9·80	8·25	10·88	10·50	11·25	8·85
Gur (maunds per plot) ..	1·18	1·13	1·38	1·28	1·23	1·10
Sucrose	20·70	20·16	20·07	19·78	19·60	19·67
	E	D	A	F	C	B
Cane (maunds per plot) ..	8·43	9·38	9·75	9·50	10·75	9·00
Gur (maunds per plot) ..	1·25	1·35	1·20	1·08	1·13	1·10
Sucrose	20·30	20·61	20·07	20·65	19·44	19·38

S

A = Cowdung.

B = Cowdung + Steamed Bonemeal.

C = Cowdung + Castor cake ½ in trench + ½ in first earthing.

D = Cowdung + Castor cake + Bonemeal.

E = Cowdung + Nicifos (Hot weather).

F = Cowdung + Nicifos ½ hot weather + ½ monsoon application.

Rate of application :—

Plant crop—N_2 = 36 lbs. (Castor cake and Nicifos).

P_2O_5 = 32 lbs. (Bonemeal).

Ratoon crop—Half of the above dose of N_2 and P_2O_5.

Annual Report of the Deputy Director of Agriculture, Eastern Circle, for the year 1940-41.

Circle.—This Circle consists of Dacca and Chittagong Divisions comprising the districts of Dacca, Faridpur, Bakarganj, Mymensingh, Tippera, Noakhali and Chittagong. Total population is roughly 20 millions.

Charge.—Mr. W. M. Clark held charge of the Circle up to the 18th April 1940. I took over charge on the 31st May 1940 and continued till the end of the year under report. Messrs. P. C. Chaudhuri, Assistant Director of Agriculture, Bengal, and M. Carbery, Director of Agriculture, Bengal, was in charge of the office of the Deputy Director of Agriculture, Eastern Circle, from the 19th April to 30th May 1940.

Babu D. N. Banerji joined as officiating Superintendent of Agriculture on the 6th November 1940 and continued till the end of the year.

(a) **Staff.**—*Dacca Farm.*—Babu S. P. Sen Gupta continued as Chief Superintendent, Dacca Farm, up to the 17th April 1940 and was succeeded by Babu S. B. Bose who held the charge up to the 3rd September 1940. The latter was relieved by Maulvi Md. Hossain Ali who joined on the 4th September 1940 and continued till the end of the year. They were assisted by a farm Superintendent, four Overseers, two Agricultural Demonstrators and two clerks. The changes in the subordinate staff were as under:—

Farm Superintendent.—Maulvi Anwaruddin Ahmed from the 1st April to 30th September 1940.

Maulvi Md. Hossain Ali No. II from the 1st October to the 16th December 1940.

Maulvi Hamza Hashmi from the 17th December to the end of the year.

Overseers.—Babu Sankar Prosad Bhattacherjee from the 1st April 1940 to the 12th December 1940.

Maulvi Mashior Rahman Khan from the 13th December 1940 to the end of the year.

Maulvi Abdul Karim and Babu Sripati Mohan Bhattacherjee continued as Overseers throughout the year and Maulvi Mobarak Ali from 1st April to 1st July 1940 and Babu Indra Mohon Das from 2nd July 1940 to the end of the year.

Mr. Phillip Gomez, Agricultural Demonstrator, from 1st April to the 5th July 1940 and Maulvi Alauddin Ahmed from the 6th July 1940 to the end of the year.

Babu Hem Chandra Roy worked as Agricultural Demonstrator from the 1st April 1940 to the 22nd October 1940 and was succeeded by Babu Babuni Singh.

District Staff.—There were seven District Agricultural Officers in charge of the district of Dacca, Faridpur, Bakarganj, Mymensingh (Sadar, Netrokona and Kishoreganj subdivisions), Chittagong, Noakhali

and Tippera while an officer in Class II of the Subordinate Agricultural Service was in charge of Tangail and Jamalpur subdivisions of the Mymensingh district with his headquarters at Jamalpur.

These eight officers were assisted by 55 Agricultural Demonstrators of whom 45 were permanent and 10 temporary, the latter being treated as officiating against posts made permanent from the 1st March 1941.

In addition to the above staff 8 overseers and 33 Agricultural Demonstrators paid from the grant of the Indian Central Jute Committee worked in this Circle.

The officers paid by the Jute Committee were primarily engaged in the investigation of the marketing of jute specially in the collection of market details regarding weights and measures, price, consumption, annual turnover, export and import, etc., as also local system of cultivation and retting, etc. They were also engaged in the early part of the year on jute Census work under the direct charge of the Special Officer appointed by the Indian Central Jute Committee. After they returned from the Census work in July 1940 these Agricultural Demonstrators took up demonstration works according to the approved departmental scheme. Each of them was as usual in charge of one Union Board Farm and three Demonstration Centres.

Thirty temporary Agricultural Demonstrators were maintained by the Local Authorities such as District Boards, Khasmahal, Court of Wards and Zaminders for the purpose of imparting knowledge of improved agriculture within their respective jurisdictions. The schemes in which they were employed were drawn up by the District Agricultural Officers and mostly supervised by them.

A statement showing the strength of the Agricultural Staff under these Local Bodies are given below:—

Dacca district.

Joydebpur Court of Wards Estate	2
Total ...	2

Bakarganj district.

Khasmahal	2
District Board	6
Total ...	8

Tippera district.

Court of Wards—	
Overseer	1
Agricultural Demonstrators	6
Khasmahal	2
Total ...	9

Noakhali district.

District Scheme inaugurated by the Collector	...	6
Total	...	6

Chittagong district.

Khasmahal	...	4
Total	...	4

Mymensingh district.

Court of Wards, Gayhatta	...	1
Grand total	...	30

A statement showing the strength of the subordinate staff in this Circle is given in Appendix I.

Tours.—Mr. W. M. Clark was on tour for 24 days and I was on tour for 66 days. The Superintendent of Agriculture was out on tour for 69 days. The District Agricultural Officers were out on tour as noted below:—

		No. of days on tour.
District Agricultural Officer, Dacca	... ...	131
District Agricultural Officer, Faridpur	... ...	130
District Agricultural Officer, Barisal	... ...	91
District Agricultural Officer, Mymensingh	...	171
District Agricultural Officer, Comilla	... ...	135
District Agricultural Officer, Noakhali	... ...	142
District Agricultural Officer, Chittagong	... ...	136
District Agricultural Officer, Jamalpur	... ...	187

Season.—The showers in March and April were much helpful for sowing *aus* paddy and jute. But heavy downpour in May and June affected the growth of these crops as proper interculture could not be done. Insufficient rainfall in the month of July delayed the transplantation of *aman* paddy and a considerable area was left fallow for want of sufficient water. In the lowlying tracts the broadcast and transplanted *aman* paddy thrived well with the gradual rise of tide water. In the highland areas growth of jute was stunted and the plants tended to flower early. There was also scarcity of water for steeping jute.

Heavy rainfall in October delayed the sowing of *rabi* crops and in some parts where they were sown early the crops could not germinate due to surface crust formed by the heavy rainfall just after sowing. The protected spell of drought during the *rabi* season adversely affected the *rabi* crops and the *aman* paddy.

Sugarcane did not thrive well and in some places the crop was attacked by stem-borer. Report of attack by red rot was also received from Mymensingh.

On the whole the year 1940-41 was not a good one for the agriculturists.

(*b*) **Names of Government farms including a brief review of work done in each.**—There are 11 Government farms including the newly started one at Chittagong. Out of the 11 farms 5 are run on Barga system, *i.e.*, on crop sharing basis. Separate reports are published and can be consulted for details.

A list of Government farms with area in each is noted below:—

Name of farm.	Area in acres.	Remarks.
1. Dacca Farm	353·70	
2. Mymensingh Farm	20·00	
3. Comilla Fzrm	20·00	
4. Barisal Farm	20·00	
5. Faridpur Farm	20·48	
6. Chittagong Farm	36·68	
7. Kishoreganj Farm	61·90	Barga.
8. Jamalpur Farm	33·50	Barga.
9. Dhanbari Farm	6·16	Barga.
10. Charbadna Farm	60·00	Barga.
11. Rajbari Farm	10·00	Barga.

Dacca Farm.—This is the Central Farm of the Province. All Experts of the department are posted here and conducted their experimental work. The Director, Jute Research Laboratory, under the Indian Central Jute Committee has been posted here. He conducts his experiments also on this farm. The reports of the farm and of the Expert officers for work conducted by them are published separately. A brief note on the work conducted by the staff of the farm is given below:—

Paddy.	Area in acre.	Yield in lbs. per acre.
Aman	52·48	1,214 lbs. against 1,444 in the previous year.
Aus	22·67	935 against 744 in the previous year.

An area of 17·10 acres was cultivated on economic basis. *Aman* paddy was grown on it. All the charges which are debited may be seen in the Financial Statement of the Dacca Farm which is published separately. A profit of Rs. 438-13-3 was made.

Sugarcane.—An outturn of 36,548 lbs. of gur was obtained against 42,078 lbs. in the previous year. Gur was sold at the rate of Rs. 3-4-3 per maund of 80 lbs. A further 210,878 cuttings were obtained out of which 99,335 were supplied outside.

Napier Grass.—It was planted on an area of 35·64 acres. The average outturn of green fodder per acre was 47,379 lbs. against 38,025 lbs. in the previous year.

Artificial farmyard manure.—A total quantity of 252,068 lbs. were produced from the plant refuses and cut grass against 638,400 lbs. in the previous year.

Silage.—Total quantity produced was 11,46,891 lbs. against 11,93,920 in the previous year.

Flax.—An area of 9·66 acres was put under Flax. This was irrigated thrice during the growing period. The crop was fairly satisfactory even under such adverse conditions.

Paddy grown and stored for seed purposes.—

Aus.—27,402 lbs. against 18,238 lbs. in the previous year.

Aman.—66,115lbs. against 76,016 lbs. in the previous year.

Mymensingh Farm.—Out of the total area of 20·00 acres 13·89 acres were under cultivation.

The Economic Botanist conducted varietal tests on *aus* and *aman* paddies on 1·80 acres. Kataktara, Dharial, Chakulia, P × S, D × S and Paspai were tried. Kataktara gave the highest yield of 2,432 lbs. per acre. Bhasamanick, Dudsar, Latisail and Birai (Local) were tried and Bhasamanick gave the highest yield of 1,125 lbs. per acre.

The Agricultural Chemist conducted field tests on Co 281, Co 508 and Co. 381. The outturn of Co 281 was the highest, yielding 6,929 lbs. of gur per acre.

Paddy grown and stored for seed purpose.—

Aus.—6,380 lbs. against 5,166 lbs. in the previous year.

Aman.—7,844 lbs. against 11,736 lbs. in the previous year.

An area of 1·25 acres was cultivated on commercial basis. A profit of Rs. 26-0-6 was obtained after incurring the heavy overhead charges.

Artificial Farmyard Manure.—A total quantity of 20,000 lbs. was manufactured against 16,400 lbs. in the previous year.

Comilla Farm.—The total area of the farm is 20·00 acres of which 13·60 acres were under cultivation.

The Economic Botanist conducted his experiments on five strains of departmental *aus*, viz., P × S, Marichbati, Dharial, Kataktara and D × L, against two varieties of local *aus* viz., Dhali and Salai. The yield of Salai was the highest yielding 1,494 lbs. per acre. He had also verietal tests on four varieties of departmental *aman* paddy, viz., Latisail, Indrasail, Bhasamanick, Tilakkachery against the local Chaplas paddy, Tilakkachery headed the list. The yield was 2,360 lbs. per acre.

Double crops of *aus* followed by *aman* were grown on an area of 9·19 acres. The combined average yield of both kinds of paddy was 3,861 lbs. against 3,703·82 lbs. per acre in the previous year. Napier grass on an area of 0·30 acres produced 2,950 lbs. of green fodder and 11,000 cuttings.

2,810 lbs. of silage was prepared.

About 23,800 lbs. of water-hyacinth compost and 14,800 lbs. of artificial farmyard manure were prepared. Besides these new heaps are estimated to be 79,200 lbs.

An area of 1·20 acres was cultivated on economic basis. The profit obtained was Rs. 122-6-3.

Barisal Farm.—Out of the total area of 20·00 acres, 15·98 acres were under cultivation.

The Economic Botanist conducted his experiments on pure lines on different varieties of *balam* paddy and Patnai. Among the different strains of *balam* paddy Basful gave the highest yield of 1,868 lbs. per acre.

The Agricultural Chemist conducted his moisture experiment on an area of 0·17 acres. The results of the experiment may be seen in his report published separately.

The clay pan experiment which was so long conducted on an area of 0·33 acres by the Agricultural Chemist has since been taken up by Dr. J. N. Mukherjee of the Calcutta University.

Paddy grown and stored for seed purpose.—

Aus.—3,552 lbs. against 1,970 lbs. in the previous year.

Aman. —17,779 lbs. against 24,952 lbs. of the previous year.

Artificial Farmyard Manure.—A total quantity of 96,000 lbs. against 67,240lbs. of the previous year was prepared.

English Vegetable.—Seedlings were raised on an area of 0·04 acres. A return of Rs. 54-11-6 was obtained by sale after keeping the requirements for the farm. English vegetables were grown on an area of 0·10 acre. Tomatoes on area of 0·33 acre averaged a return of Rs. 900 per acre.

An area of 3·00 acres was cultivated on commercial basis. Basful paddy was grown there.

A profit of Rs. 23-7-0 was obtained.

Faridpur Farm.—The area of the farm is 20·48 acres, out of which 14·66 acres was available for cultivation.

The varietal tests on *aus* paddies, viz., D × L, Pukhi, P × S, Marichbati and Parangi were conducted on an area of 1·00 acres. Parangi headed the list. The yield was 1,080 lbs. per acre.

The experiment on Jute was conducted on an area of 1·20 acres by the Indian Central Jute Committee. Funduk, D 154 and D 386 were the varieties under experiment.

Some portion of the area could not be transplanted for want of sufficient water.

Paddy grown and stored for seed purpose—

Aus.—1,720 lbs. against 606 lbs. in the previous year.

Aman.—1,002 lbs. against 8,546 lbs. in the previous year.

The low outturn was due to failure of *aman* crop.

Artificial Farmyard Manure.—19,600 lbs. were prepared against 24,240 lbs. in the previous year.

An area of 3·50 acres were cultivated in the kharif season and an area of 3·33 acres in the *rabi* season were cultivated on commercial basis.

The loss sustained was Rs. 222-15-6.

Chittagong Farm.—The area of the farm is 36·68 acres.

The area was made over to this department on the 20th December 1940. The reclamation work is in progress and regular cultivation work will be taken up in the next kharif season.

The office buildings, inspection room, implement shed and threshing floor have not yet been constructed.

Three pairs of bullocks have been purchased.

(*c*) **Barga Farms.**—There are 5 such farms on Government land. The cultivation of these farms is done on crop sharing basis. The total area of each farm has been shown under paragraph "B" of the report. Government share of the main crop is usually half and half.

Name of farm.	Area in acre.	Crop.	Yield of paddy in lbs.	Yield per acre in lbs.
Kishoreganj	34·72	*Aus* ..	32,634	940
	16·83	*Aman* ..	13,756	817
Jamalpur	15·85	*Aus* ..	16,624	1,049
	11·90	*Aman* ..	14,820	1,246
Dhanbari	3·48	*Aus* ..	3,066	881
	1·33	*Aman* ..	1,280	962
Charbadna	2·00	*Aus* ..	3,040	1,520
	54·33	*Aman*	85,100	1,566
Rajbasi	2·32	*Aus* ..	522	238

(*d*) **Union Board Farms and Demonstration Centres.**—There were 41 Union Board Farms and 132 Demonstration Centres in existence from the previous year under the Departmental Demonstrators. With the return of the Agricultural Demonstrators of the Indian Central Jute Committee from the Jute Census work and with the appointment of Additional Departmental Demonstrators 38 Union Board Farms and 96 Demonstration Centres were started in the *rabi* season. So at the end of the year there were in all 79 Union Board Farms and 228 Demonstration Centres, under Departmental Demonstrators.

Thirty Demonstration Centres were started in the district of Noakhali under the supervision of the Agricultural Demonstrators employed under the district scheme inaugurated by the Collector of Noakhali and 8 Union Board Farms and 21 Demonstration Centres were started in Bakarganj under the supervision of the Demonstrators employed by the District Board and Khasmahal. Therefore there were 87 Union Board Farms and 279 Demonstration Centres in this Circle during the

year under report. These Union Boards and Demonstration Centres served as liaison seed centres between the Government Farms and the cultivators fields.

With the exception of potato the cropping of the Union Board Farms and Demonstration Centres was the same as in the previous year. But in the district of Noakhali potato was included in the cropping scheme in selected centres as the cultivation of this crop was practically unknown to the cultivators in that area. The details of the works of the Union Board Farms are given in Appendix II.

Fifty-one ploughs, 43 Handhoes and 5 Rakes were supplied to the growers of Union Board Farms and Demonstration Centres. The light improved ploughs recently introduced are much appreciated by the cultivators as being more suitable to their bullocks.

In the Union Board Farms the total area under *aus* and *aman* were 109;66 and 122·15 acres, respectively. The total outturns of *aus* paddy and *aman* paddy received were 135,168 lbs. and 169,580 lbs., respectively, out of which 75,670 lbs. of *aus* and 104,470 lbs. of *aman* were either stored, exchanged or sold as seed. Thus 56 per cent. of *aus* paddy and 62 per cent. *aman* paddy were set apart for seed purpose. The statement is given in Appendix III.

Again in the Demonstration Centres an area of 623·71 and 507·14 acres were under *aus* and *aman* producing total outturns of 765,490 lbs. and 731,146 lbs., respectively. The quantities of *aus* and *aman* paddy seeds were either stored, exchanged or sold as seeds were 135,184 lbs. and 224,130 lbs., respectively, against 215,292 lbs. and 615,926 lbs. in the previous year. Therefore the percentages of distribution of paddy seeds from the Demonstration Centres were 18 of *aus* and 31 of *aman*, respectively. Details are noted in Appendix IV.

The quantity of Artificial Farmyard Manure manufactured in the Union Board Farms and demonstration centres was 2,914,530 lbs. It is gratifying that the cultivators are gradually realising how their requirements of manure can be easily supplemented without any cost by the application of Artificial Farmyard Manure prepared from weeds and other plant rubbish.

The quantity of silage manufactured in Union Board Farms and Demonstration Centres was 169,890 lbs. The practice of storing fodder as silage has not yet been adopted by the cultivators in general on any large scale.

Premium System.—The introduction of this system has created an incentive not only among growers of the Union Board Farms and Demonstration Centres for storage of pure departmental seeds but also among other growers of departmental crops. The subsidy was paid only for paddy in this circle. This has automatically helped in the dissemination of departmental pure paddy seeds in the areas so long left unexplored. Attempts will be made to include other *rabi* crops in this scheme. During the year under report an amount of Rs. 509-13 was spent for payment of premium on 1,210 maunds 37 seers of *aus* and 1,710 maunds 27 seers *aman* paddies.

(*e*) **Seed farms other than Union Board Farms and the work done by each.**—The following private seed farms were in existence during

the year under report. The owners of these farms took keen interest for growing the departmental recommended varieties of crops :—

Name of district.	Centre.	Name of owner.	Area in acres.	Variety of crops grown.
Dacca ..	Routkana ..	Md. Chami Pradhan ..	33	*Aus* and *aman* paddy and jute.
	Silmandi ..	Md. Khayeruddin ..	25	*Aus* and *aman* paddies.
	Kashimpur	Late Shambhu Charan Bhattacherjee.	66	Ditto.
	Ulile ..	Parbati Charan Chakravarty ..	10	Ditto.
Tippera ..	Ulchapara (Brahmanbaria).	Maulvi Abdul Noor Khan ..	5	Departmental *aus* paddy and *aman* paddy : 95 maunds stored.
	Gautampara	Maulvi Kamaruddin ..	3	Departmental *aus* paddy and *aman* paddy : 45 maunds stored.
	Radhika ..	Babu Adhar Ch. De of Sultanpur.	4	Departmental *aus* paddy and *aman* paddy : 25 maunds stored.
	Nabinagar	Babu Sudhir Ch. Das of Zinatpur	10	Departmental *Aus* paddy and *aman* paddy : 60 maunds stored.
	Ditto ..	Maulvi Madan Mia of Nabinagar	5	Departmental *aus* paddy and *aman* paddy : 40 maunds stored.
	Dampti ..	Babu Pabitra Mohon Pal ..	7	Departmental *aus* paddy and *aman* paddy : 95 maunds stored.
	Baniacho	Maulvi Faiz Ahmed Mea ..	4	Departmental *aus* paddy and *aman* paddy : 60 maunds stored.
	Dadsi ..	Babu Jogendra Kumar Chakravarty.	12	Departmental *aus* paddy and *aman* paddy : 140 maunds stored.
	Faridganj	Maulvi Karim Baksa ..	4	Departmental *aus* paddy and *aman* paddy : 55 maunds stored.
	Hareng ..	Maulvi Abdul Hamid ..	2	Departmental *aus* paddy and *aman* paddy 15 maunds stored.
Mymensingh (Jamalpur).	Satkura ..	Md. Lalmohon Taluqdar ..	10	Departmental *aus* and *aman*.
	Nandina ..	Sushil Ch. Bose ..	12	Ditto.
	Sharifpur ..	Hyder Maulic ..	8	Ditto.
	Durmut ..	Syed Rashiduzzaman ..	8	Ditto.
	Islampur ..	Mosharff Hossain ..	8	Ditto.
	Narundi ..	Saraffuddin ..	10	Ditto.
	Bachchera (Narundi).	Maulvi Buzlar Rahman ..	5	Ditto.
	Shahapur ..	Md. Naibali Taluqdar ..	5	Ditto.
	Gayahatta	Natu Hazi ..	10	Ditto.
	Sahabatpur	Mati Lal Shaha ..	8	Ditto.

(*f*) **Brief note on the Private Farms in the Circle.**—A statement showing the private farms managed by the different agencies is given below :—

(*I*) **Under the Khasmahal.**—Farm at Charnilkamal in the district of Tippera.

(*II*) **Under the Court of Wards.**—(*a*) Joydebpur Farm under the Bhowal Court of Wards' Estate in the district of Dacca. The area of the Farm is 13·00 acres. The Farm was under the supervision of an Agricultural Demonstrator maintained by the Estate. Seventy-five maunds and 39 maunds 32 seers of *aman* and *aus* seeds respectively and 7,159 sugarcane cuttings were supplied to the tenants of the Estate out of the Farm produce. Three Stud Bulls were maintained and they served 209 cows during the year under report.

(*b*) Gayhatta Farm in the district of Mymensingh. The area of the Farm is 5·28 acres.

The Farm is under the supervision of an Agricultural Demonstrator maintained by the Estate.

The departmental recommended crops were grown there.

(*c*) Paschimgaon and Nangalkot Farms of the Badaranessa Estate, Barkanta Farm of the B. K. Raj Estate, Debiduar Farm of the Kazi Estate, Majitpur Farm of the Mirjulpur Estate in the district of Tippera. The area of each of the five farms is one acre. Each of the farm is under the supervision of an Agricultural Demonstrator maintained by the Court of Wards' Estate of the Tippera District.

(*III*) **Private Farms.**—

Mymensingh district.

(*a*) *Gauripur Farm.*—It belongs to the Raja of Gouripur. The area of the farm is 20·00 acres. Recommended varieties of *aus*, *aman*, sugarcane, cotton, Napier and tobacco were successfully grown. Two stud bulls are maintained for improving the breed of the local cows.

(*b*) *Shasa Farm.*—The area of the Farm is 100·00 acres. It belongs to the Maharaja Bahadur of Mymensingh. A tractor has been purchased for the farm. This farm has been started mainly for horticultural purpose. A big tank has been excavated and a pump has been set up for irrigation.

(*c*) *Baiganbari Farm.*—This is a very small farm belonging to the Maharaja Bahadur of Mymensingh.

(*d*) *The Kashimpur Farm.*—The area of the farm is 15·00 acres. Mustard and cotton were also grown here under the supervision of the 2nd Economic Botanist, Bengal, near Kasimpur in Mymensingh.

(*e*) *Baratya Farm.*—The area of the farm is 8·00 acres. It belongs to the Six-Annas Estate of Sontosh (Tangail).

(*f*) *Gilabari Farm.*—The area of the farm is 300·00 acres. It belongs to Maulvi Abdul Zabbar Paloan, M.L.A.

Tippera district.

The Brahmanbaria farm belongs to Raja Kamal Ranjan Roy of Kashimbazar (Murshidabad). The area of the farm is 5·00 acres. Departmental recommended crops were successfully grown there. The soil of the farm is very fertile and land is mostly double cropped.

Chittagong district.

(a) *Dineshpur Farm.*—The area of the farm is 26·00 acres. It belongs to Rai Bahadur K. C. Roy, Zamindar. Sugarcane was extensively grown there. Departmental recommended varieties of paddy, tobacco and potato were also grown with success.

(b) *Shilkot Farm.*—The farm is of about 500·00 acres and is situated on hillocks and valley lands. *Aman* paddy, potato, tobacco, chillies and different kinds of fruits were grown. It belongs to Maulvi Shaikh Wazid Ali Choudhury.

(c) *Churamani Farm.*—The area of the farm is 30·00 acres. It belongs to Babu Banga Ch. Das. *Aman* paddy, sugarcane, English vegetables and fruits were grown.

(d) *Sanua Farm.*—The area of the farm is 10·00 acres. It belongs to Sanua Samabaya Palli Mangal Samity. Paddy, English vegetables, potato and raddish were grown.

(e) *Santinekatan Farm.*—The area of the farm is 20·00 acres. It belongs to Pandit Subal Chandra De. English vegetables, tobacco and Napier grass were grown.

(f) *Bhatiari Farm.*—The area of the farm is 50·00 acres. It belongs to Babu Sati Prosad Sen. *Aman* paddy, different varieties of fruits and English and country vegetables were grown with success.

(g) *Nanupur Farm.*—The area of the farm is about 72·00 acres. It belongs to a Limited Company the managing Director of which is Maulvi Ismail Haque. Different varieties of fruits and vegetables were grown.

Noakhali district.

(1) Maulvi Abbas Ali's Farm—8·33 acres—Departmental jute and paddy.

(2) Maulvi Ali Ulla's Farm —8·33 acres—Departmental jute and paddy.

(3) Maulvi Abu Subiau's Farm—6·66 acres—Departmental jute and paddy.

(4) Maulvi Arip Mia Sadagar's Farm—8·33 acres—Departmental jute and paddy.

(5) Kali Pada Babu's Farm—10·00 acres—Departmental jute and paddy.

(6) Maulvi Jaynal Abdin's Farm—6·66 acres—Departmental jute and paddy.

(7) Babu Gopal Chandra Dhar's Farm—8·33 acres—Departmental jute and paddy.

(8) Babu Upendra Kumar Pal's Farm—6·33 acres—Departmental jute and paddy.

(9) Babu Kunja Behari Lodh's Farm—8·33 acres—Departmental jute and paddy.

(10) Babu Nagendra Ch. Choudhury's Farm—13·33 acres—Departmental jute and paddy.

(11) Babu Sukumar Mazumdar's Farm—10·00 acres—Departmental jute and paddy.

(12) Babu Sashi Kumar Chakravarty's Farm—6·66 acres—Departmental jute and paddy.

(*gi*) **Seed Stores including Financial Statements of their receipts and expenditure.**—There are seven seed stores attached to each of the Government Farms at Dacca, Mymensingh, Comilla, Barisal, Faridpur, Kishoreganj and Jamalpur.

The financial statements of the seed stores are given in Appendix V.

(*gii*) **Seed stores under private management with names.**—

(1) Paschimgaon Seed store.

(2) Nangalkot Seed store.

(3) Barkanta Seed store.

(4) Debiduar Seed store.

(5) Majitpur Seed store.

(*h*) **Number of lantern and other lectures delivered in each district.**—The district Agricultural Officers delivered 156 lectures of which 61 were illustrated by magic lantern. A statement showing the number of lectures delivered and the number of cultivators attending each is given in Appendix VI. Lectures were also given by means of gramophone talks.

(*i*) **Number of exhibitions and shows in which the Department participated.**—Exhibitions were held in the districts of Dacca, Bakarganj, Mymensingh, Tippera and Chittagong. There were 8 exhibitions in all. Agricultural implements, seeds and manures were distributed as prizes and were very much appreciated. A list of the prizes distributed is given in Appendix XII. One of the most gratifying features was that besides the departmental exhibits a very large number of exhibits in the shape of English vegetables, pulses and fibres were received from the Union Board Farms and Demonstration Centres. The samples produced in most cases were very good. A statement of exhibitions held is given in Appendix VII.

(*j*) **Supply of improved and recommended seeds and cuttings.**—A statement showing the various kinds of improved seeds and cuttings distributed in the Eastern Circle is given in Appendix VIII. It will appear therefrom that the demand of pure seeds is on the increase. A statement showing the supply of seeds by sale and free in the Eastern Circle is given in Appendices XIII and XIV.

(*k*) **Free distribution of seeds other than those supplied to the Union Board Farms and Demonstration Centres for demonstration purpose.**—

	Md.	sr.
Bakarganj district.		
Patnai paddy	42	0
Cowpea	2	0
Maize	2	20
Mustard	2	20

Mymensingh district.

	Md.	srs.
Maize	3	25
Joar	2	0
Tori	30	0

Chittagong district.

	Md.	srs.
Maize seeds	4	35
Mustard seeds	2	20

Dacca district.

	Md.	srs.
Maize	13	0
Cowpea	2	0
Mustard (tori)	20	0
Mustard (rai)	6	30

Tippera district.

	Md.	srs.
Maize	7	25
Cowpea	3	0
Joar	6	5
Mustard	8	12
Rai No. 5	2	25

Noakhali district.

	Md.	srs.
Patnai paddy	8	30
Mustard	2	20
Maize	7	0
Cowpea	1	23

Faridpur district.

	Md.	srs.
Mustard	1	2½

It is expected there will be growing demand for the Patnai paddy seeds in saline tracts of Noakhali, Bakarganj and Chittagong.

(*l*) **Particulars of Agricultural Scheme worked out and financed by (1) the Khasmahal, Court of Wards, District Boards and Agricultural Associations.**—Khasmahal, Court of Wards, District Boards and District Scheme work are either run separately or conjointly in the district of Dacca, Faridpur, Mymensingh, Tippera, Noakhali, Chittagong and Bakarganj. The amount spent in each district on staff, seeds, etc., is given below:—

	Rs.	a.	p.
Tippera	8,150	0	0
Noakhali	1,593	8	3
Chittagong	2,700	0	0
Bakarganj	5,815	0	0
Dacca	2,500	0	0
Faridpur	400	0	0
Mymensingh	493	13	6

A statement showing the activities is given in Appendix IX.

One named South Kotwali Agricultural Association at Ulakanda in Faridpur is in existence. No appreciable work was done by this society.

(*m*) **Note on the cultivation of Napier grass and manufacture of Artificial Farmyard Manure and Silage.**—In appendix X a statement showing the supply of Napier grass cuttings from the farms of this Circle is given. Napier grass was grown in Dacca, Mymensingh, Comilla, Barisal, Faridpur and Jamalpur Farms. A statement showing the area and the quantity of green fodder produced in the above farms is given beolw:—

Name of farm.	Area.	Quantity. Md. sr. ch.	lbs.
Dacca farm	33·64	20,918 8 0	16,73,456
Mymensingh farm	0·51	207 20 0	16,600
Comilla farm	0·30	36 35 0	2,950
Barisal farm	0·50	473 20 0	29,880
Faridpur farm	0·22	127 21 0	10,292
Jamalpur farm	0·30	73 0 0	5,840

A silo was made in the Dacca and the Comilla Farms only during the year under report. The quantity of silage prepared in each farm is given below:—

	lbs.
Dacca Farm	11,75,563
Comilla Farm	2,810

Artificial Farmyard Manure.—It is made in all farms. A statement showing the quantity of manure prepared from the refuses and weeds is given in Appendix XI.

The quantity of Artificial Farmyard Manure prepared in Union Board and Demonstration Centres of this Circle is 29,14,530 lbs.

(*n*) **Progress with regard to the organisation of Co-operative Agricultural and Irrigation Societies.**—There is no such active organisation in this circle.

(*o*) **Work done in connection with jute restriction.**—In order to help the cultivators to secure seeds for growing as substitute crops on the considerably large area released as a result of the compulsory jute restriction scheme, Government sanctioned a sum of Rs. 38,000 for this Circle for expenditure within the current financial year. The whole of this amount was spent for the purchase of paddy seeds mostly *aus* for sale in the districts of Faridpur and Mymensingh where it was found there has been a partial failure of the paddy crops in certain parts. In all 43 centres were opened in these two districts where paddy was stocked for sale to the cultivators at local market rates. A statement is furnished below showing the total quantity of paddy

stocked and sold within 31st March 1941. As a result of the long continued drought there has been very little sowing of *aus* but it is expected that there will be very great demand for seed with the first shower of rain. Besides paddy seed 100 maunds of groundnut seed has also been received for free distribution to the cultivators in the district of Mymensingh.

A sum of Rs. 2,15,000 has also been allotted to this Circle for the above purpose for expenditure during 1941-42.

A statement showing the total quantity of paddy seeds stocked and sold within 31st March 1941.

Stock of paddy seeds.

	Md.	sr.	ch.
Faridpur district.			
Aus paddy seeds	3,091	8	8
Aman paddy seeds	1,900	23	8
	4,991	32	0
Mymensingh district.			
Aus paddy seeds	2,576	1	12
Aman paddy seeds	100	0	0
	2,676	1	12
Total ..	7,667	33	12

Sale of paddy seeds.

	Md.	sr.	ch.
Faridpur district.			
Aus paddy seeds	37	32	8
Aman paddy seeds	..		
	37	32	8
Mymensingh district.			
Aus paddy seeds	1,046	18	8
Aman paddy seeds	1	0	0
	1,047	18	8
Total ..	1,085	11	0
Balance in stock	6,582	22	12
Total ..	7,667	23	12

(p) **Agricultural Education.**—There was a free Primary School at the Kishoreganj Farm run at Government cost. It was however abolished with effect from the 1st March 1941. Government have subsequently decided to continue the school. The following schools had agricultural classes under the Punjab Scheme:—

Dacca district.

(1) Dacca Farm M. E. School.
(2) Gayespur M. E. School.
(3) Elokeshi M. E. School.

Mymensingh district.

(4) Haluaghat M. E. School.
(5) Birisiri M. E. School.
(6) Dhanbari Nawab Institution.

Faridpur district.

(7) Bharpur M. E. School.

Tippera district.

(8) Raipur K. C. H. E. School.

Noakhali district.

(9) Ali Azam M. E. School.
(10) Chatkhil H. E. School.

Bakarganj district.

(11) Matbaria Khasmahal Latiff H. E. School.
(12) Madhabpasa Chandradwip H. E. School.
(13) Baptist Mission M. E. School.

Chittagong district.

(14) Durgapur H. E. School.
(15) Fatehabad H. E. School.
(16) Chakrasala M. E. School.
(17) Khadhurkhali H. E. School.

Acknowledgment.—Thanks are due to the all officials and non-officials who assisted the department in its numerous activities. A few amongst many is mentioned below—

Officials.—Messrs. J. George, Collector, Dacca, S. K. Ghosh, Collector, Mymensingh, S. N. Gupta, Collector, Faridpur, H. Ali, Collector, Noakhali.

The district staff gave a good account of themselves. Babu Benode Lal Mukherjee, an experienced District Agricultural Officer, retired with effect from the 16th September 1940. The office staff particularly rendered me full assistance.

S. ABDULLAH,

Deputy Director of Agriculture, Eastern Circle, Dacca.

APPENDIX I.

A statement showing the staff of the Department and that of the Indian Central Jute Committee and other bodies in the districts of the Eastern Circle.

Name of district.	Departmental Number of District Agricultural Officer.	Officers Number of overseers.	Number of Agricultural Demonstrators.		Indian Central Jute Committee.		Court of Wards, number of Agricultural Demonstrators.	Khas Mahal, number of Agricultural Demonstrators.	Other Bodies. Number of Agricultural Demonstrators.	Total.
			Permanent.	Temporary (*a*).	Number of Overseers.	Number of Agricultural Demonstrators.				
Dacca Farm ..	1	4	2	..	..	..	..	..	..	7
Dacca District ..	1	..	8	1	2	8	2	..	..	22
Faridpur District	1	..	5	1	1	4	..	..	..	12
Backerganj District	1	..	6	1	..	1	..	2	6	17
Mymensingh District	1	1	9	2	3	12	1	..	..	29
Tippera District ..	1	..	3	4	1	4	1+6=7	2	..	22
Noakhali District	1	..	5	1	1	4	..	..	6	18
Chittagong District	1	..	7	..	..	..	..	4	..	12
Total ..	8	5	45	10	8	33	10	8	12	139

N. B.—(*a*) These posts were made permanent with effect from March 1941.

APPENDIX II.

A consolidated Statement showing the Agricultural Operations undertaken in the Union Board Farms during the year 1940-41.

Name of district.	Name of the Union Board Farms.	Name of owners.	Name of crops grown.	Area in acre.	Outturn in lbs.	Value of seeds and manures supplied.	Quantity of seeds stored or exchanged.
						Rs. a. p.	
Dacca ..	Dhaida, Ulile Baiderbazer, Ramchandradi, Simulia, Rairbazar. Baira, Kandikul. Srirampur, Brahmandi. Ghonapara, Kapasia. Kalinagar, Palasona, Charsilmandi and Galora.	Md. Ali Singh, Parbati Ch. Chakraborty, Mafizuddin Mia, Osman Bepari, Montazuddin Ahmed, Maulvi Abdul Shack, Babu Lokesh Ch. Roy, Gaynath Mandal, Serajul Hoque, Babu Jitendra Kr. Maulic, Allahauddin Mia, Babu Sitanath Mandal, Abdul Zabbar Hazi, Charu Ch. Bhattacherjee, Ahmed Ali Sarkar, Makbul Hossain.	*Aus* paddy ..	22·00	26,934	..	14,420
			Aman Paddy	14·33	20,110	..	8,800
			Jute ..	2·66	3,680	Partly damaged by draught.	
			Maize ..	5·00	64,080		
			Wheat ..	1·66	1,120	Partly damaged by draught.	
			Mustard ..	5·33	1,944	Ditto.	
			Oats ..	1·33	9,360		
			Tobacco ..	5·33	Net yet cured.		
			English Vegetables.	2·66	Sold for Rs. 400		
			Lentil ..	3·00	1,460	Partly damaged.	
			Gram ..	7·66	5,340		
			Maize and Cowpea.	14·16	189,370		
				..	..	1,994 4 0	
				12·00	[illegible]	..	3,000

			Cowpea.	..	..	1,994 4 0	
			Aus Paddy	12·00	5,310	..	3,600
Faridpur ..	Kaijuri, Indranarainpur, Char Lakshipur, Manikdah Jaudi, Debagram, Nararkandi, Berachikundi and Sahidpur.	Babu S. C. Das, Babu J. C. Sen, Arsadali, Ahmed Ali, Abdul Jalil Maijan Sardar, Abdul Kasem.	Sugarcane ..	0·83	4,320	..	..
			Jute ..	1·66	2,640	..	..
			Napier Grass	0·42	4,240	..	..
			Tori No. 7 ..	4·33	2,500	..	1,120
			Gram ..	4·33	2,400	..	1,060
			Lentil ..	3·00	1,710	..	720
			English	1·50	Sold for Rs. 195		
			Tobacco ..	3·00	1,520	..	25 Tolas seeds.
			Groundnut	0·33	4·60	..	70
				..	..	902 0 0	
			Aus Paddy	8·33	7,730	..	7,250
Bakarganj ..	Harinafulia, Rairkathi, Khalisa Khali, Gabardan, Bapta and Nasnapara.	Abdul Latiff, Gopal Ch. Mistry, Fatik Ch. Dutt, Maminuddin Sardar, Khalil Haoladar and Sha Solam Haidar.	*Aman* Paddy	23·66	45,400	..	45,400
			Jute ..	1·66	1,560	Partly damaged.	
			Gram ..	2·66	830	..	..
			Lentil ..	2·32	1,332	Partly damaged.	
			English Vegetable.	0·96	Sold for Rs. 129.		
			Tobacco ..	1·64	Not yet cured.		
			Napier grass	0·80	New plantation.		
			Sugarcane ..	1·00	Ditto.		
			Groundnut	0·16	Not yet harvested.		
						588 0 0	

APPENDIX II—*contd.*

Name of district.	Name of the Union Board Farms.	Name of owners.	Name of crops grown.	Area in acre.	Outturn in lbs.	Value of seeds and manures supplied.	Quantity of seeds stored or exchanged.
						Rs. a. p.	
Mymensingh ..	Dholadia, Dhanikhola, Nagra, Charnilokha, Latifpur, Gaffargaon, Tautkura, Mujali, Isabpur, Sandikona, and Sararchar.	Kubedali Bepari, Khan Shaheb Osman Ali, Maulvi Nurazzaman, Maulvi Sirajud-ddin Ahmed, Md. Khaled Mia, Maulvi Abdul Karim Mia, Babu Annada Ch. Das, Babu Kaliash Ch. Roy, Md. Mantaz-zuddin Ahmed, Babu Srish Ch. Ukil, and Babu Naresh Gobinda Roy.	*Aus* Paddy	15·00	16,300	..	..
			Aman Paddy	10·00	13,000	..	..
			Jute ..	1·66	Fibre 2964, seeds 24.		
			Sugarcane ..	1·77	Gur 2,338, cane sold for cash and 0·96 acres new plantation.		
			Napier Grass	1·77	24,480 and 0·96 acres new plantation.		
			English Vegetable.	1·37	Sold for Rs. 206-8.		
			Gram ..	1·77	1,294	..	..
			Lentil ..	2·79	976	..	..
			Mustard ..	2·66	988	..	..
			Tobacco ..	2·79	772	..	..
			Groundnut	0·33	160	..	..
						1,130 0 0	

Jamalpur (Mymensingh).	Jamalpur, Dhanbari, Kalihati, Tangail, Sherpur, Dewanganj, Islampur, Narundi, Gopalpur, Konabari, and Nagarpur.	Maulvi Hyder Ali, Maulvi Maulvi Barkatulla Sarkar, Babu Satish Ch. Bose, Babu Purnendu M. Ghose, Maulvi Makbul Hossain Mia and Saharuddin Sarkar, Maulvi Nazamul Hoque Chaudhury and Jaynal Abdin Khan, Maulvi Rahamat Mandal, Maulvi Bazlal Rahman, Babu Bhupati Mohan Roy Chaudhury, Babu Satyendra Nath Bhattacharjee, and Babu Surendra Nath Shaha.	*Aus Paddy*	15·00	17,754	..	..
			Aman Paddy	24·00	17,080	..	..
			Jute ..	1·66	2,160	..	..
			English vegetable.	1·83	Sold for Rs. 253-4.		
			Gram	5·66	5,044	..	..
			Lentil ..	3·66	1,900	..	..
			Mustard ..	3·66	1,506	..	..
			Wheat ..	2·33	1,680	..	..
			Groundnut	2·33	Not yet harvested.		
			Tobacco ..	2·83	Not yet cured.		
			Napier grass	1·33	New plantation.		
			Sugarcane ..	1·50	Ditto.		
			Arahar	0·33	320	..	..
			Peas ..	0·33	200	..	..
			Maze	0·33	12,000	..	..
						1,357 9 9	

APPENDIX II—*contd.*

Name of district.	Name of the Union Board Farms.	Name of owners.	Name of crops grown.	Area in acre.	Outturn in lbs.	Value of seeds and manures supplied.	Quantity of seeds stored or exchanged.
						Rs. a. p.	
Tippera ..	Sadar (Ghoramara), Gurahit, Astagram, Jagatpur, Sengaon, Sayedpur, Elliotganj, Companyganj, Nabinagar and Haziganj	Munshi Lal Mia, Babu Harendra Kr. Dutt, Asrab Hossain (Nanu Mia), Kali Kanta De, Rajendra Kr. Chakraborty, Munshi Asradali, Babu Devendra Ch. Sil, Munshi Sujat Ali, Munshi Sabdan Ali and Babu Jay Chandra Shaha.	*Aus* paddy ..	12·00	20,560	..	14,320
			Aman paddy	12·00	22,320	..	10,000
			Jute ..	2·00	4,950	..	..
			Groundnut	1·50	590	Rabi area not yet harvested.	
			Cowpea and	1·50	41,200	..	..
			Napier grass	1·25	8,440	Some area under new plantation.	
			English Vegetable.	1·50	Sold for Rs. 475		
			Gram ..	4·66	3,684	..	..
			Mustard ..	3·33	1,544	..	..
			Raddish ..	0·58	Sold for Rs. 58		
			Lentil ..	3·33	1,898	..	..
			Wheat ..	1·66	1,269	..	..
			Tobacco ..	2·33	1,938	..	..
			Sugarcane ..	1·56	2,920	Some are under new plantation.	
				12·00	19,560	..	11,720

Noakhali ..	Safipur, Bazra, Malinagar, Daspara Bagair, Noapara, West Raipur, South Maguri, Daulatpur and Berahimpur.	Maulvi Jalal Ahmed Mia, Babu Raj Kr. Saha, Maulvi Habibulla Bhuia, Hazi Khaliloor Rahman, Akter Jaman, Abdur Rahman, Maulvi Sona Mia Bhuia, Maulvi Nural Huda, Maulvi Basirulla Bhuia and Hazi Asrab Ali Chaudhury.	*Aus paddy*	12·00	19,560	..	11,720
			Aman paddy	12·00	20,920	..	11,360
			Jute ..	2·00	3,616	..	..
			Sugarcane ..	1·33	480	Some area under new plantation and damaged.	
			English vegetable.	1·66	Sold for Rs. 370		
			Raddish	0·83	Sold for Rs. 84		
			Potato ..	0·83	7,440	..	..
			Tobacco ..	1·00	Partly damaged and the rest not yet harvested.		
			Groundnut	3·33	Not yet harvested.		
			Gram ..	4·88	2,054	Some area not yet harvested.	
			Mustard ..	3·33	1,460	..	..
			Lentil ..	3·33	2,680	..	..
			Field peas ..	1·33	940	..	..
			Napier grass	1·66	4,000	Mostly new plantation.	
			Wheat ..	1·33	Not yet harvested.		
			Maize and Cowpea.	0·66	6,160	1,172 0 0	..
				..	..	1,054 15 9	

APPENDIX II—*concld.*

Name of district.	Name of the Union Board Farms.	Name of owners.	Name of crops grown.	Area in acre.	Outturn in lbs.	Value of seeds and manures supplied.	Quantity of seeds stored or exchanged.
						Rs. a. p.	
Chittagong ..	Mahara, Amirabad, Azimpur, Jaldi, Sagir, Md. Ghat and Fatehkharkul.	Maulvi Abdul Latiff Khan, Babu Prasanna Kr. Deb, Munshi Abdul Sobhan, Maulvi Wazid Ali Chaudhury, Samsher Rahman and Bachamia.	*Aus* paddy	10·33	17,040	..	..
			Aman paddy	16·16	30,760	..	..
			Napier grass	0·50	8,000	..	..
			Gram ..	1·00	300	..	..
			Lentil ..	1·33	450	..	..
			Field peas ..	1·16	600	..	..
			Tobacco ..	2·66	Not yet harvested.		
			English vegetable.	2·00	Sold for Rs. 175.		
			Raddish ..	1·00	Sold for Rs. 82.		
			Groundnut	1·66	Not yet harvested.		
			Mustard ..	1·33	400		
						531 0 0	

APPENDIX III.

A consolidated statement of the yield of paddy in the Union Board Farms of the Eastern Circle.

Name of district.	Area under *Aus* in acres.	Outturn of *Aus* paddy in lbs.	Quantity of *Aus* paddy stored in lbs.	Area under *Aman* paddy in acres.	Outturn of *Aman* paddy in lbs.	Quantity of *Aman* paddy stored in lbs.
1	2	3	4	5	6	7
Dacca ..	22·00	26,934	14,420	14·33	20,110	8,800
Faridpur ..	15·00	9,310	3,600	..	..	..
Backerganj ..	8·33	7,730	7,250	23·66	45,400	45,400
Mymensingh ..	15·00	16,300	5,680	10·00	13,000	3,310
Jamalpur (Mymensingh) ..	15·00	17,734	9,640	34·00	17,080	12,000
Tippera ..	12·00	20,560	14,320	12·00	11,320	10,000
Noakhali ..	12·00	19,560	11,720	12·00	20,910	11,360
Chittagong ..	10·33	17,040	9,040	16·16	30,760	13,600
Total ..	109·66	135,168	75,670	122·15	169,580	104,470

Average yield of *aus* paddy per acre—1,233 lbs. or 15 maunds 16 seers and 8 chataks.
Average yield of *aman* paddy per acre—1,388 lbs. or 17 maunds 14 seers.
Percentage of *aus* paddy seeds stored—56.
Percentage of *aman* paddy seed stored—62.

APPENDIX IV.

A consolidated statement of the yield of paddy in the Union Board Farms of the Eastern Circle, in 1940-41, and the number of cultivators who took part both during Kharif and Rabi.

Name of district.	Area under *Aus* in acres.	Outturn of *Aus* paddy in lbs.	Quantity of *Aus* paddy stored in lbs.	Area under *Aman* paddy in acres.	Outturn of *Aman* paddy in lbs.	Quantity of *Aman* paddy stored in lbs.	Number of cultivators who took part in Kharif and Rabi.
1	2	3	4	5	6	7	8
Dacca	130·66	136,166	8,320	81·00	114,272	10,920	448
Faridpur	104·00	69,654	14,680	..	..	..	224
Backerganj ..	32·00	27,728	22,290	73·00	106,820	102,940	210
Mymensingh ..	60·00	69,140	17,290	60·00	61,050	16,600	654
Jamalpur (Mymensingh)	50·00	59,534	..	50·00	37,120	..	..
Tippera	90·00	151,122	25,290	90·00	155,160	45,440	359
Noakhali ..	84·20	132,520	30,574	79·50	124,024	27,470	520
Chittagong ..	72·85	120,626	16,740	73·64	132,700	20,760	215
Total ..	623·71	765,490	135,184	507·14	731,146	224,130	2,630

Average yield of *aus* paddy per acre—1,226 lbs. or 15 maunds 13 seers.
Average yield of *aman* paddy per acre—1,444 lbs. or 18 maunds 2 seers.
Percentage of *aus* paddy seeds stored—18.
Percentage of *aman* paddy seeds stored—31.

APPENDIX V.

A consolidated Financial Statement of the Seedstores attached to the Dacca, Mymensingh, Comilla, Barisal, Faridpur, Kishoreganj and Jamalpur Farms.

Dr.	Rs. a. p.	*Cr.*	Rs. a. p.
1. Sale proceeds in hand on 1st April 1940.	..	1. Sale proceeds in hand on 31st March 1941.	..
2. Value of purchases and other raw materials in stock on 1st April 1940.	1,636 2 3	2. Value of purchased articles and other raw materials in stock on 31st March 1941.	706 3 0
3. Amount of the unrealised sale proceeds due to the seedstore on 1st April 1940.	66 10 0	3. Amount of unrealised sale proceeds due to the seed stores on 31st March 1941.	21 8 0
4. Value of the tools and plants, other Agricultural implements and Miscellaneous articles on 1st April 1940.	907 7 0	4. Value of tools and plants, other Agricultural implements and miscellaneous articles on 31st March 1941.	1,172 12 9
5. Value of furniture in stock on 1st April 1941.	95 12 9	5. Value of furniture in stock on 31st March 1941.	91 3 0
6. Amount drawn from the treasury— (a) Contingencies Rs. 396 14 3; (b) Other charges Rs. 400 10 9	797 9 0	6. Amount credited to the treasury during the year 1940-41.	3,174 6 9
7. Value of seeds, manures, etc., received from other farms, other departments and outside the provinces adjusted by S. T. or B. T. Invoice.	2,437 3 9	7. Value of seeds, manures, etc., supplied and adjusted by B. T. and S. T. Invoices.	981 3 5
Profit	208 8 0		
Total ..	6,149 4 9		6,149 4 9

APPENDIX VI.

Exhibitions and Lantern Lectures.

Name of district.	Names of the places of lectures.	Number of lantern lectures delivered.	Average number of cultivators attending the lantern lectures.	Remarks.
Dacca ..	Narainganj, Dacca, Lakpur Ramkrishna Mission Ground, Sonargaon, Pakunda, Damodardi, Baluadighirpar, Baunia, Dakshin Silmandi.	12	250	....
Mymensingh ..	Tamtkura, Salihar, Ganindapur, Digharkanda, Bayera, Keyotkhali, Vatikasar	7	260	....
Noakhali ..	Sonaimuri, Bhadur, Noapara, Bosemahamad, Saiipur, Bogoir.	11	150	....

APPENDIX VI—*concld.*

Name of district.	Names of the places of lectures.	Number of lantern lectures delivered.	Average number of cultivators attending the lantern lectures.	Remarks.
Chittagong ..	Azimpur, Palligram, Sharafbhata, Banaghope, Mobarek, Haidgaon, Imamnagar, Rajarkul, Tarial, Chittagong, Bhahuli, Falika, Charoia, Lakherchan, Tullubnagar, Chittagong town, exhibition.	21	100	Ordinary lectures.
Backerganj ..	Anantaganj, Mithaganj, Lamopara, Tetla, Tushkhali, Chandramohon, Dighirjan, Bhuta, Raniganjhat, Babuganj, Lalmohan andMatbaria.	14	425	Ordinary lectures were given as Magic lantern was not available.
Tippera ..	Raipur, Elliotganj, Brahmanbaria, Companyganj, Paschimgaon, Jagatpur, Balakhal, Gurohit and Nangalkot.	15	300	....
Jamalpur ..	Binanai, Shahabazar, Kalihati, Bausi, Belua, Nalla, Ramnagar, Pukhuria, Chikajani and Marurchar.	70	300	Ten were with Magic lantern slides.
Faridpur ..	Char Lakshmipur, Gopalganj, Raipur Krishnanagar, Charbhadrason, Faridpur Jail, and Madaripur.	6	..	Three were with magic lantern slides.

APPENDIX VII.

Statement of Exhibitions held.

Name of district.	Names of exhibitions where prizes were given at the cost of the Department.	Names of exhibition participated by the Department but no prizes were given.
Dacca	Sonargaon	Kanchanpur and Manickganj.
Faridpur	....	....
Backerganj	Lalmohon and Matbaria ..	....
Mymensingh	....	....
Jamalpur	Jamalpur	....
Tippera	Brahmanbaria	....
Noakhali	....	....
Chittagong	Chittagong	....

APPENDIX VIII.

A statement showing the supply of improved seeds, manures, cutting, etc., in the Eastern Circle during the year 1940-41.

Name of district.	*Aus* paddy seeds in lbs.	*Aman* paddy seeds in lbs.	Sugarcane cuttings in number.	Jute seeds. in lbs.	Gram in lbs.
Dacca	31,307	10,321	300,959	2,020	1,184
Faridpur	28,080	8,736	180,000	44	740
Backerganj	2,480	3,570	48,000	15	436
Mymensingh	11,200	2,400	140,000	28	1,006
Jamalpur (Mymensingh) ..	4,240	600	110,000	42	1,078
Tippera	15,368	14,182	124,000	1,200	888
Noakhali	8,680	5,240	76,000	18	828
Chittagong	6,560	7,780	53,500	..	120

Name of district.	Lentil in lbs.	Mustard in lbs.	Wheat in lbs.	Tobacco seeds in tolas.	Potato seeds in lbs.
Dacca	656	2,476	160	191	160
Faridpur	1,408	1,084	637	52	..
Backerganj	420	20	..	30	..
Mymensingh	630	1,398	..	48	..
Jamalpur (Mymensingh) ..	670	134	1,280	63	..
Tippera	466	1,030	820	40	..
Noakhali	612	324	424	156	1,440
Chittagong	144	233	..	172	..

Name of district.	Cowpea in lbs.	Maize in lbs.	Oats in lbs.	Patal vines in lbs.	English vegetables.
Dacca	160	1,040	863	200	Rs. 185-11 worth.
Faridpur	..	68	..	..	680 pakets.
Backerganj	..	..	..	..	540 packets.
Mymensingh	..	290	..	..	880 packets.
Jamalpur (Mymensingh) ..	190	..	..	..	Rs. 101-13 worth.
Tippera	240	610	..	..	800 packets.
Noakhali	126	560	..	..	782 packets and 5 oz.
Chittagong	..	390	..	..	440 packets and 16 oz.

APPENDIX VIII—*concld.*

Name of district.	Napier cuttings in numbers.	Castor cake in lbs.	Niciphos in lb.	Bonemeal in lbs.	Country Rake in Nos.	Plough in Nos.
Dacca	..	28,480	4,040	..	..	12
Faridpur	60,000	6,640	635	5,200	..	8
Bakarganj	..	5,760	1,804	2,400	5	6
Mymensingh	1,08,000	10,400	..	3,440	..	..
Jamalpur (Mymensingh) ..	94,000	1,118	1,600	8,342	..	9
Tippera	19,000	3,520	1,320	3,680	..	12
Noakhali	23,500	6,520	4,108	5,920	..	11
Chittagong	20,000	4,980	1,970	1,920	..	2

Names of district.	Hand hoes in number.	Linseed in lbs.	Groundnut in lbs.	Ammonium Sulphate in lbs.	Dhaincha seed in lbs.	Peas in lbs.
Dacca	16	..	..	..	..	..
Faridpur	4	276	265	1,287	..	..
Bakarganj	1	24	190	..	..	..
Mymensingh	..	..	200	2,560	840	..
Jamalpur (Mymensingh) ..	7	..	530	3,840	..	40
Tippera	4	..	440	320	..	..
Noakhali	6	..	785	1,600	..	235
Chittagong	..	..	1,040	1,200	..	186

Name of district.	Joar in lbs.	Rahar in lbs.	Raddish in lbs.	Pine-apples suckers, in number.	Sonamug in lbs.	Sunnhemp in lbs.
Dacca	..	..	..	..	..	..
Faridpur	..	207	..	..	4	..
Bakarganj	..	..	..	..	..	..
Mymensingh	160	..	..	..	..	..
Jamalpur (Mymensingh)	..	8	..	..	..	..
Tippera	490	..	6	..	..	..
Noakhali	..	..	24	600	10	..
Chittagong	..	..	38	..	..	30

APPENDIX IX.

Activities of the Court of Wards, Khasmahal, District Board and the Agricultural Associations in connection with the Improvement of Agriculture in the Eastern Circle in 1940-41.

Name of District.	Name of Agencies.	Distribution of seeds in lbs.		Distribution of manures in lbs.	Contribution and grants.	Number of Agricultural Demonstrators appointed and maintained, if any.
					Rs. a. p.	
Dacca ..	Bhowal Court of Wards Estate.	Tilakkachari *aman* paddy seeds ..	840	Nil	2,500 0 0	2
		Latisail *aman* paddy seeds ..	5,041			
		Bhasamanik aman paddy seeds ..	120			
		Dharial *aus* paddy seeds ..	5,929			
		Sugarcane cuttings	7,159 Nos.			
		Mustard ..	54			
Faridpur ..	Khasmahal ..	Sugarcane cuttings ..	60,000 Nos.	Castormeal 2,400 lbs.	400 0 0	Nil
		Dharial *aus* paddy seeds ..	260			
Mymensingh	Court of Wards Estate, Gayahatta.	Dharial *aus* paddy seeds ..	552	Nil	493 13 6	1
		Tilkkachari aman paddy seeds ..	398			
		Indrasail aman paddy seeds ..	16			
		Matihari Tobacco seedlings ..	500			
		Sugarcane cuttings ..	26,540 Nos.			

Backerganj	*District Board and Khasmahal.*	Gram .. .. 880 Lentil .. .. 744 Mustard .. 232 Linseed .. 12 Ground nut .. 290 Sugarcane .. 12,000 Nos. Tobacco .. 14 tolas English vegetables .. 95 pkts. Napier cuttings .. 54,000 Nos. Implement— Ploughs .. 27 Nos. Hand hoes .. 27 ,,	Bonemeal 2,800 Castormeal 4,640 Niciphos .. 2,628	District board 3,960 0 0 Khasmahal .. 1,855 0 0 Total .. 5,815 0 0	8
Tippera ..	Khasmahal and the Court of Wards Estates.	*Aus* paddy seeds .. 6,480 Aman paddy seeds 8,080 Jute seeds .. 10 Potato seeds .. 4,240 Raddish seeds .. 86 English vegetables 52 oz. Brinjal seeds .. 2 tolas Sugarcane cuttings .. 20,000 Nos. Pulses .. 4,000	Manures 56,640	8,150 0 0	Overseer 1 Demonstrator 8
Chittagong	Khasmahal ..	*Aus* paddy seeds .. 1,920 Aman paddy seeds .. 4,000 Sugarcane cuttings 29,500 Nos. English vegetable seeds .. .. 16 ozs. Groundnut seeds .. 480 Raddish seeds .. 16 Sikhim Peas .. 5 Motihari Tobacco seeds .. .. 100 tolas	Nil	2,400 0 0	4
	Collector's Scheme	Cockerals .. 31 Nos.		300 0 0	

APPENDIX IX—*concld.*

Name of District.	Name of Agencies.	Distribution of seeds in lbs.		Distribution of manures in lbs.	Contribution and grants.	Number of Agricultural Demonstrators appointed and maintained, if any.
					Rs. a. p.	
Noakhali ..	Local Agricultural Scheme inaugurated by the Collector.	*Aus* paddy seeds ..	1,400	Nil	1,593 8 9	6
		Aman paddy seeds ..	900			
		Pineapple suckers	600 Nos.			
		Turmeric ..	250			
		Ginger	124			
		English Vegetable ..	2 pakts. 5 oz.			
		Rai No. 5 ..	75			
		Brinjal seeds ..	6 oz.			
		Potato	600			
		Gram ..	10			
		Lentil	5			
		Peas	5			
		Sonamug ..	10			
		Groundnut ..	5			
		Raddish ..	15			
		Napier grass cuttings ..	2,000 Nos.			
		Tobacco seeds ..	120 tolas.			

APPENDIX X.

Production of Napier grass cutting in Government Farms and their distribution.

Name of farm.	Quantity grown in lbs.	Quantity of distribution in lbs.	
		Free.	On payment.
Dacca Farm	360	..	360
Mymensingh Farm	3,080	3,080	..
Comilla Farm	1,520	1,520	..
Barisal Farm	7,680	3,200	4,480
Faridpur Farm	320	320	..

APPENDIX XI.

Artificial Farmyard Manure and Silage produced in Government Farms.

Name of Farm.	Quantity of Artificial Farmyard Manure in lbs.	Quantity of Silage in lbs.
Dacca Farm	252,068	1,175,563
Mymensingh Farm	20,000	..
Comilla Farm	117,800	2,810
Barisal Farm	96,000	..
Faridpur Farm	19,600	..
Kishoreganj Farm	12,000	..
Jamalpur Farm	14,000	..
Dhanbari Farm	14 heaps	..
Charbadna Farm	19,680	..
Rajbari Farm	6,000	..
Chittagong Farm	..	..

APPENDIX XII.

List of prizes distributed in Exhibition.

1.	Dao	16
2.	Bill hooks	40
3.	Chuff cutter	6
4.	Sickles	90
5.	Yoke	6
6.	Weeding implements	48
7.	Paddy seeds	1,300 lbs.
8.	Khurpi	24
9.	Jute seeds	20 lbs.
10.	Khurpi Kodali	18
11.	Axe	6
12.	Weeding Pattern Kodali Fork	30
13.	Rake	18
14.	Kodali	69
15	Watering cars	30
16.	"D" Type ploughs	14
17.	Bucket	11
18.	"B" Type harrowing hoe	3
19.	"C" Type plough	2
20.	Castor meal	1,840 lbs.
21.	Bonemeal	1,840 "
22.	Sulphate of Ammonia	920
23.	Cockerals and Pullets	6

APPENDIX XIII.

Statement showing the distribution of seeds and cuttings by sale in the Eastern Circle.

	Name of seeds and cuttings.	Quantity or number.
1.	*Aman* paddy	70,265 lbs.
2.	*Aus* paddy	36,454 "
3.	Mustard	178 "
4.	Gram	58 "
5.	Wheat	57 "
6.	Lentil	1,497 "
7.	Jute seeds	2,196 "
8.	Tobacco seeds	433¼ tolas.
9.	Sugarcane cuttings	1,80,000 Nos.
10.	Potato	160 lbs.
11.	Napier cuttings	500 "
12.	Groundnut	15½ "
13.	Peas	5 "
14.	English vegetables seeds	5 tolas.
15.	Paddy seedlings	340 bundles.
16.	Arahar	271 lbs.
17.	Linseed	352 "

APPENDIX XIV.

Statement showing the free distribution of seeds and cuttings.

Name of seeds and cuttings.	Quantity or number.
1. Maize	3,886 lbs.
2. Cowpea	360 ,,
3. Oats	863 ,,
4. *Aman* paddy	30,250 ,,
5. *Aus* paddy	98,165 ,,
6. Mustard	7,034 ,,
7. Lentil	5,566 ,,
8. Gram	6,784 ,,
9. Wheat	2,124 ,,
10. Jute seeds	147 ,,
11. Patal vines	200 ,,
12. Tobacco seeds	315 tolas.
13. English vegetable seeds	6,295 pkts. & 16 oz.
14. Sugarcane cuttings	1,519,800 nos.
15. Napier cuttings	439,500 ,,
16. Linseed	60 lbs.
17. Groundnut	3,720 ,,
18. Joar seeds	11,770 ,,
19. Dhaincha seeds	840 ,,
20. Raddish	53 ,,
21. Peas	411 ,,
22. Potato seeds	840 ,,
23. Sunnhemp	30 ,,

Annual Report of the Deputy Director of Agriculture, Western Circle, for the year 1940-41.

I. General.

Charge.—During the year under review Mr. S. C. Ray, B.A., B.Sc. (Agri.) (Wales), Superintendent of Agriculture, Western Circle, remained in charge of the office of the Deputy Director of Agriculture, Western Circle, in addition to his own duties, for the period from the 1st April 1940 to the 8th May 1940 and made over the charge to me on the 9th May 1940, when I joined this Circle, as the Deputy Director of Agriculture. I continued to hold charge till the end of the year under report, except for the period from the 17th October 1940 to the 23rd December 1940, when I was on leave and Mr. A. M. Ahmad, B.Sc. (Ag.), Superintendent of Agriculture, Western Circle, officiated in my place in addition to his own duties.

Tours.—Mr. S. C. Ray was out on tour for 64 days. Mr. A. M. Ahmad, as Deputy Director of Agriculture, Western Circle, toured for 19 days and as Superintendent of Agriculture, Western Circle, toured for 28 days, while I spent 47 days on tour.

Staff.—There were 9 permanent officers in Class I of the Subordinate Agricultural Service and 3 officiated in the same cadre during the year under report. The total strength of the officers in Class II of the Subordinate Agricultural Service was 4 at the end of the year, of which 2 were officiating hands. Four permanent and 3 more temporary Agricultural Demonstrators were allotted to this Circle during the year but only one permanent and 3 temporary Agricultural Demonstrators could join within the year. Their names and postings are noted below :—

(1) Babu Badal Chandra Paul, Permanent, Belda (Midnapore).

(2) Babu Deba Prasad Sen Gupta, Temporary, Gorabari (Bankura).

(3) Babu Haladhar Mandal, Temporary, Bolepur (Birbhum).

(4) Babu Sasanka Mohan Dass, Temporary, Dahijury (Midnapore).

Out of the 18 temporary Agricultural Demonstrators only 3 as shown below were made permanent during the year :—

(1) Maulvi Akbar Haider, Rampurhat (Birbhum).

(2) Maulvi Mustafizur Rahman, Bongaon (Jessore).

(3) Babu Keshab Chandra Neogy, Khirpai (Midnapore).

A statement showing the relative strength of the Agricultural Demonstrators—permanent, temporary and officiating in this Circle is furnished below, as stood on 31st March 1941:—

District.	Permanent.	Temporary.	Officiating.	Total.
Bankura	2	2	..	4
Midnapore	5	2	2	9
Howrah	2	1	..	3
Hooghly	3	1	..	4
Burdwan	1	4	1	6
Birbhum	5	1	..	6
Murshidabad ..	2	..	2	4
Nadia	4	1	1	6
Jessore	1	4	..	5
Khulna	2	1	..	3
24-Parganas ..	3	..	1	4
Chinsurah (Farm) ..	No demonstrator is posted at the farm.			
Total ..	30	17	7	54

Temporary staff in connection with the Indian Central Jute Committee.—The following table will show the posting of this staff in each district:—

District.	Jute Overseer.	Jute Agricultural Demonstrator.
24-Parganas	1 (in charge of Howrah and Hooghly also).	2
Nadia	1 (in charge of Berhampore, Burdwan and Midnapore also).	2
Jessore	1 (in charge of Khulna and Bakarganj also).	1
Khulna	....	2
Murshidabad	....	1
Burdwan	....	1
Hooghly	....	1
Howrah	....	1
Total ..	3	11

Transfers.—There have been good many transfers in this Circle during the year under review.

Mr. S. C. Ray, Superintendent of Agriculture, Western Circle, has been transferred to the Bengal Agricultural Institute, Dacca, as Agriculturist and Mr. A. M. Ahmad, on being relieved from the Northern Circle, took over charge from him on the 7th September 1940.

Babu S. B. Bose, District Agricultural Officer, Burdwan, was promoted to act in the Lower Agricultural Service and made over charge of his office to Babu Jagada Govinda Bhowmick, B.Sc. (Ag.), on the 15th April 1940. Babu S. B. Bose, however, reverted to his

substantive post and took over charge on 7th September 1940 from Babu Jagada Govinda Bhowmick, who was posted in Northern Circle.

Babu Mohini Mohan Ghosh, Farm Superintendent, Chinsurah, went on leave preparatory to retirement with effect from the 2nd September 1940 and Babu P. R. Sen Gupta, Senior Overseer of the Chinsurah Farm, was allowed to act as Farm Superintendent up to the 20th January 1941, when Babu C. R. Banerjee, B.Sc. (Ag.), took over charge from him.

Babu Hem Chandra Roy, District Agricultural Officer, Hooghly, was transferred to Rajshahi Farm, making over charge of his office to Babu P. R. Sen Gupta, Officiating Farm Superintendent, Chinsurah Farm, on the forenoon of the 6th January 1941. The latter in addition to his own duties held the charge of the office of the District Agricultural Officer, Hooghly, up to the 20th January 1941. He was subsequently appointed to act as District Agricultural Officer, Hooghly, and continued in that capacity till 2nd March 1941, when Babu J. C. Roy, returning from leave, was transferred there to take over charge from Babu P. R. Sen Gupta who then reverted to his substantive post, on the 3rd March 1941.

Babu Sachindra Krishna Dutta, District Agricultural Officer, Howrah, went on leave preparatory to retirement with effect from the 20th May 1940 and Babu Bhabesh Chandra Roy, Overseer, Chinsurah Farm, was appointed in his place to act as District Agricultural Officer, Howrah.

Babu Atal Behari Sen, District Agricultural Officer, Nadia, went on leave, and Babu Prafulla Kumar Das, Farm Superintendent, Rajshahi Farm, on being transferred, took over charge from him on the afternoon of the 25th December 1940.

Babu Amitava Sen, District Agricultural Officer, Berhampore, was transferred to Rangpur making over charge to Maulvi Anwaruddin Ahmed on the 18th October 1940.

Babu Jogendra Chandra De, District Agricultural Officer, Birbhum, was deputed as Agricultural Officer under "More" Irrigation Survey Scheme with effect from the 2nd January 1941 to the 31st March 1941 and Maulvi Hossain Ali (No. II), Superintendent, Dacca Farm, was transferred as District Agricultural Officer, Birbhum, for the period.

There had been as many as 6 changes within the year under report with regard to the posting of the District Agricultural Officer, 24-Parganas, as shown below:—

(1) Babu J. M. Ganguly from 1st April 1940 to 31st June 1940.
(2) Maulvi A. W. Mollah from 1st July 1940 to 2nd August 1940.
(3) Maulvi Mainuddin Ahmed from 16th August 1940 to 29th December 1940.
(4) Babu Nirmal Deb from 30th December 1940.
(5) Babu B. C. Roy from 31st December 1940 to 26th January 1941 in addition to his own duties as District Agricultural Officer, Howrah.
(6) Babu H. L. Roy Choudhury from 27th January 1941 to the end of the year.

Babu Makhan Lal Patra, Agricultural Demonstrator (Sadar), was in charge for the period from the 3rd to the 15th August 1940.

Babu Pabitra Mohan Sen, Officiating District Agricultural Officer, Jessore, having been discharged from service, Maulvi Mainuddin Ahmed, District Agricultural Officer, on being transferred from 24-Parganas, took over charge from him on the forenoon of the 13th January 1941.

Babu Nani Gopal Burman Roy, Agricultural Officer, Gosaba, was transferred to the Bengal Agricultural Institute, Dacca, as Assistant to the Agriculturist and Babu Hem Sankar Majumdar, Field Assistant under Economic Botanist, was transferred as Agricultural Officer, Gosaba, on the 3rd July 1940.

A statement showing the number of staff employed in the various districts of this Circle during the year 1940-41 would be found in Appendix A.

Weather and general review.—The rainfall, on the whole, was far below the normal specially in the districts of Birbhum, Bankura and parts of Murshidabad and Burdwan. It was untimely and unevenly distributed and in most of the districts it ceased early. In some parts of the some of the districts, the *aus* paddy crop was almost a total failure. Fairly good results, however, have been obtained on an average. The same statement more or less applies to the transplanted *aman* paddy crop, with the difference, however, that in some parts, lower outturns were obtained due to floods, specially in some parts of Midnapore. Again in scattered parts of many districts, all the *aman* paddy could not be transplanted as there was insufficient rainfall at the transplanting time. Fair average outturn of jute was obtained but difficulties arose at the time of retting, due to want of sufficient water for steeping purposes. Sugarcane fared badly at the maturing stage due to prolonged drought then prevalent.

For the *rabi* crops, however, this year's distribution of rainfall was most unfavourable, as the rain ceased early and there was practically no rain from October till the end of the year. As a result, the outturns were very poor and considering that for the last few years similar conditions have regularly recurred, it is considered advisable to arrange for cheap facilities for irrigation, if good *rabi* crops have to be raised; for, it will be seen that even in this adverse year, by the application of only two irrigations the outturn of linseed was raised from 3 maunds to 18 maunds per acre at Ramnagger.

II. Government Farms.

There were seven Government farms in the Western Circle, during the year under report, due to the addition of one new farm at Midnapore. The resumé of each of these farms is given below:—

(1) **Chinsurah Farm.**—*Area.*—The farm occupies an area of 210·0 acres of land, of which 37·96 acres are under roads and buildings. The cropped area, however, including double cropping is 210·91 acres. Of this 27·56 acres are under the Rice Research Scheme, 16·50 acres under the school, and 18·21 acres under cultivation on economic basis.

Staff.—The total staff for the farm is one Farm Superintendent, one clerk, and three Overseers.

Cattle.—The total strength of cattle engaged is 56 for farm work and 2 for school work.

Season.—The total precipitation during the year was 54·27 inches in 100 days, against a normal of 58·71 inches. The distribution of rainfall was very uneven. The precipitation of about 11 inches more than the normal in the month of September affected adversely both *aman* paddy and *rabi* crops.

Operations as stated below were carried out during the year:—

(1) *Experimental.*—(*a*) Manurial experiment with different doses of Niciphos, in four replications with control plots on *aman* paddy.

(*b*) Complex experiment laid out in 1934 with four varieties of *aman* paddy, viz., Badkalamkati 65, Jhingasail, Latisail and Bhasamanik with different manures.

(*c*) Paddy seed rate experiment.

(*d*) *Jute experiment of the Indian Central Jute Committee.*—Three Olitorius varieties of jute are under trial.

(*e*) Groundnut, rahar and cotton were tried at the instance of the Second Economic Botanist.

(*f*) Potato was tried on 0·25 acres.

(*g*) *Sugarcane.*—Six varieties of Coimbatore cane, viz., 381, 508, 281, 421, 213 and 331 were grown, of which 508 and 381 (two early varieties) fared well under the conditions of the year.

(2) *Non-experimental.*—(*a*) Fodder crops, Joar, Guinea and Napier grass.

(*b*) Three varieties of *aus* paddy—Kataktara, Dharial and Charnock were grown for seed multiplication, and have respectively yielded 20 maunds 25 seers 12 chattaks, 19 maunds 34 seers 14 chattacks and 17 maunds 21 seers 10 chattaks per acre.

(*c*) Ten varieties of transplanted *aman* paddies were grown for seed multiplication. Results are given below:—

Paddy.	Yield per acre. Md.	sr.	ch.
Jhingasail	23	18	10
Bhashamanik	19	37	9
Badkalamkati 65	19	14	6
Patnai Gosaba 23	18	0	0
Badshabhog	9	5	10
Nagra 41-40	13	31	5
Dudsar	13	13	5
Dadkhani	12	21	13
Tilakkachery	8	20	10
Latisail	7	6	10

(d) *Jute.*—"Chinsurah Green" was grown on 0·20 acre and seeds weighing 41 seers only were obtained.

(e) *Flax.*—20·0 acres were put under flax as per the Government of India Flax Scheme for the multiplication of seeds.

(f) Different *rabi* crops, viz., Wheat I. P. 52, Lentil 5, Gram S. 4, Peas, Motihari tobacco for seeds, Kalai and Khesari.

(g) *Fruits and vegetables.*—In 1·25 acres were produced fruits and vegetables, the sale-proceeds of which amounted to Rs. 42-13-6.

(3) *Cultivation on economic basis.*—Joar fodder, Kataktara *aus*, Dharial *aus* and Patnai G. 23 *aman* paddies were grown on 18·28 acres, and yielded a profit of Rs. 805-8-9.

(4) *Artificial farmyard manure.*—2,388 maunds were prepared.

(5) *Silage making.*—765 maunds were prepared.

(6) *Fisheries.*—Rs. 56-11 were realised as sale-proceeds.

(2) **Burdwan Farm.**—The Burdwan Raj contributes an annual grant of Rs. 2,800 towards its maintenance.

Area.—The farm has an area of 35 acres of which 8·863 acres were under drains, roads and buildings and 26·137 under cultivation, of which 18·247 acres were cultivated on economic basis.

Staff.—The District Agricultural Officer, Burdwan, with one Demonstrator managed the farm.

Cattle.—There were 6 bullocks.

Season.—The annual precipitation was 40·73 inches in 78 days against 58·70 inches of normal rainfall.

Operations as stated below were carried out during the year:—

(1) *Experimental.*—(a) *Aus paddy varietal trials.*—Five varieties against Jatakalma local *aus* were grown. Newali *aus* gave the highest yield which was 20 maunds 22 seers per acre.

(b) *Aman paddy varietal trials.*—Seven varieties against Jatakalma local *aman* were tried. Bhasamanik gave the highest yield which was 30 maunds 26 seers 10 chattaks per acre.

(c) *Sugarcane varietal trial.*—Co. 281, 381, 508, 331 and 421 were grown. Co. 331 gave the highest yield of *gur*, viz., 82 maunds 20 seers per acre.

(d) *Saboi grass.*—Five maunds of suckers of this grass were supplied in the district.

(2) *Non-experimental.*—

	Acres.
(a) *Aus* paddy	·95
(b) Cowpea	·20
(c) Napier grass	·95
(d) Dhaincha for green manuring	1·00

(3) *Cultivation on economic basis.*—Four varieties of *aman* paddy were grown on 18·247 acres and yielded a profit of Rs. 789-6-6.

(4) *Artificial farmyard manure.*—510 maunds were prepared.

The farm has been closed down with effect from the afternoon of the 31st March 1941 and given back to the Burdwan Raj Estate.

(3) **Suri Farm.**—*Area.*—The total area of this farm is 33·26 acres of which 10·82 acres are under roads, drains and buildings, 4·3 acres under Rice Research Scheme and ·4 acre under cultivation on economic lines.

Staff.—There was one District Agricultural Officer and one clerk on the farm during the year.

Cattle.—The number of bullocks on the farm at the end of the year was nine.

Season.—The total rainfall during the year was 26·70 inches spread over 66 days against the normal precipitation of 56·98 inches. The abnormally scanty rains affected all crops. The precipitation of 8·4 inches in August, however, saved the transplanted paddy crop to some extent.

Operations as stated below were carried out in the farm during the year:—

(1) *Experimental.*—(*a*) Green manuring experiment with Dhaincha, Sunnhemp and Cowpea was carried on in the *aman* paddy lands.

(*b*) *Varietal trial of sugarcane.*—Five varieties were tried.

(*c*) Cotton experiment was done.

(2) *Non-experimental.*—The following crops were grown:—Arhar variety 620 and Arhar Early, Motihari tobacco, Mustard, Groundnut and English vegetables.

(3) *Cultivation on economic basis.*—·4 acre was put under four varieties of *aman* paddies, viz., Bhasamanik, Boldar, Sindurmukhi and Badkalamkati. Yields obtained were 26 maunds, 22 maunds, 2[illegible] maunds 10 seers and 23 maunds per acre, respectively.

(4) *Preparation of artificial farmyard manure.*—The total quantity prepared was 800 maunds during the year.

(5) *Silage.*—181 maunds 38 seers were prepared during the year.

(6) *Fishery.*—3 maunds and 1 seer of fish were sold during the year (fetching a sale-proceed of Rs. 26-14-9).

(4) **Bankura Farm.**—*Area.*—The total area of this farm is 3[illegible] acres of which 9·10 acres are under roads, drains and buildings, 1[illegible] acres under Rice Research Scheme and 25 acres under cultivation on economic lines.

Staff.—The staff consists of one District Agricultural Officer, one Agricultural Demonstrator and one clerk.

Cattle.—The number of bullocks on the farm is eight. There is also a bull, which served 76 cows during the year.

Season.—The total rainfall during the year was 42·72 inches spread over 90 days, against a normal precipitation of 50·39 inches. Deficient rainfall in the beginning of the year delayed transplantation of paddy crops. The shortage of late season rainfall lowered the yields of *rabi* crops in general.

Operations as stated below were carried out during the year:—

(1) *Experimental.—(a) Sugarcane varietal experiment on ·6 acre.*—Six varieties were grown and 32 maunds 31 seers 9 chattaks of *gur* and 48,400 cuttings were obtained per acre.

(*b*) *Experiment on cotton.*—Two varieties with spacing and time of planting experiments were tried. June sowing gave the best result, and distances suitable were found to be 3 feet from row to row and 2 feet from plant to plant in a row.

(*c*) *Fruit research work.*—The following fruit plants were tried:—

	Acres.
Pineapple	·05
Lime	·25
Guava	·20
Pomello	·18
Lichi	·20
Nagpur orange	·05

Sale-proceeds from Guava and Lime amounted to Rs. 30-11-9 only.

(2) *Non-experimental.*—The following crops were grown:—Napier, Maize, Cowpea as mixed crop, and Joar for fodder, Groundnut, Arhar, *Aus* paddy, *Aman* paddy, Castor, Tobacco, Wheat, Gram, Lentil, Mustard, Pea, Madagascar Bean, Altissima and Dhaincha for seeds and green manuring.

Bhutmuri *aus* paddy was transplanted on ·8 acre of land yielding 28 maunds 7 seers 8 chattaks per acre. Dharial *aus* paddy was transplanted on ·25 acre and gave an yield of 22 maunds 30 seers per acre.

(3) *Cultivation on economic basis.*—·25 acre of land was cultivated.

(4) *Preparation of artificial farmyard manure.*—855 maunds of this manure were prepared during the year under report.

(5) *Fisheries.*—Rs. 7-8 worth of fish fries were purchased and put in the two tanks of the farm.

(5) **Krishnagar Farm.**—*Area.*—The total area is 46·30 acres of which 8 acres are under roads, buildings and drains, and 1·16 acres under cultivation on economic lines.

Staff.—There is one District Agricultural Officer, one farm clerk and one Agricultural Demonstrator attached to the farm.

Cattle.—There are 23 heads of bullocks on the farm of which 12 are for the farm proper, 4 for the Horticultural Section and 7 for the Animal Nutrition Scheme.

Season.—The total rainfall during the year was 40·29 inches spread over 91 days against a normal of 58·4 inches. The season, on the whole, was unfavourable for both *rabi* and kharif crops as the rainfall was far below the normal, untimely, unevenly distributed and ceased early.

Operations as stated below were carried out during the year:—

(1) *Experimental.—(a) Varietal test of aus paddies.*—Three departmental varieties and a local one with six replications were tried.

(*b*) *Varietal test of groundnuts.*—Six departmental varieties against a local were tried.

(*c*) Manurial experiment on D × L *aus* paddy was made.

(*d*) *Gur*-boiling test on six varieties (early and late) of sugarcane was carried out.

(*e*) *Experiment on cotton varieties.*—Dacca No. I and Dacca No. II were grown. Dacca No. II gave an yield of 14 maunds 21 seers per acre of seed cotton.

(*f*) Several varieties of Mung and Kalai were tried as an experiment to find out which variety was the best.

(2) *Non-experimental.*—The following crops were grown:—*Aus*, *Aman*, Arhar, Potato, Mustard, Gram, Lentil, Wheat, Linseed, Joar, Napier, Cowpea for fodder, Dhaincha and Cowpea for green manures, and English vegetables.

Flax also was cultivated on about 5½ acres of land, under the Government of India Flax Scheme, for multiplication of seeds.

(3) *Cultivation on economic basis.*—Sugarcane was grown on 1·16 acres on economic lines. The outturn included 35 maunds 4 seers 8 chattaks of *gur*, 560 maunds of whole cane and 22,500 of top cuttings.

(4) *Preparation of artificial farmyard manure.*—544 maunds were prepared during the year under report.

(6) **Berhampore Farm.**—*Area.*—The total area is 43·92 acres of which 14·47 are under roads, drains and buildings, 8·89 under experimental crops, ·66 under orchards and 16·30 under economic cultivation.

Staff.—There is one District Agricultural Officer, one Overseer and one farm clerk attached to the farm.

Cattle.—There are fifteen heads of cattle on the farm.

Season.—The total rainfall was 21·04 inches spread over 76 days against 44 inches normal. The rainfall was too deficient to raise successful crops of both kharif and *rabi*.

Operations as stated below were carried out during the year:—

(1) *Experimental.—(a) Varietal test of aus paddies.*—Five early varieties against an early local varieties were tried.

(*b*) *Varietal test of aus paddies.*—Five late varieties against a local variety were tried.

(*c*) *Varietal test of wheat.*—Seven varieties were under trial.

(*d*) *Varietal test of sugarcane.*—Nine varieties were under trial on 1/10th of an acre each.

(*e*) *Berseem.*—The crop was a new introduction to the farm and was under trial.

(*f*) *Varietal test of Olitorius jute.*—Two varieties against a local were tried in 12 replications on 1/57th of an acre each.

(g) *Linseed varietal test.*—Nineteen varieties were under trial.

(h) *Linseed.*—Time of sowing and time of harvesting experiment on four varieties were carried out.

(i) *Varietal experiment of groundnut.*—Six varieties against a local were grown.

(j) Flax experiment with different seed rates was carried out.

(2) *Non-experimental.*—The following crops were grown:—Agave, Groundnut, Jute, Cowpea, Altissima, Maize and Napier for fodder, Sunnhemp and Cowpea for green manure, Lentil, Mustard, Wheat, Potato, Linseed, Cotton, Tobacco, Arhar and Gram.

Flax was grown on 3·55 acres under the Government of India Flax Scheme.

(3) *Cultivation on economic lines.*—16·3 acres were cultivated on economic basis.

(4) *Preparation of artificial farmyard manure.*—2,160 maunds were prepared.

(7) **Midnapore Farm.**—About 100 bighas of land were acquired at Faringdanga for a farm in the Midnapore district. The construction of the buildings, etc., has been completed by the Communications and Works Department and handed over to the department. The laying out of the farm has been undertaken. Arrangements for provision of water would be undertaken early next year.

(8) **Maslandpur Farm.**—The Maslandpur Detenu Training Camp (Farm) was handed over for management to the Agricultural Department in 1938. The total area of the farm is 477 bighas 16 kottahs 13 chattaks, out of which 111 bighas 18 cottahs were under cultivation and the rest of the areas were occupied by roads, drains, buildings and cultivable waste, full of Ulu and Kashia grass.

The seasons both *rabi* and kharif were unfavourable and the crop-yield was unsatisfactory.

Maulvi A. Latiff, Overseer, was in charge of the farm from the beginning of the year up to 18th November 1940, when he was relieved by Babu Hira Lal Banerjee, Overseer.

The cultivation of the area was done under *barga* system.

The actual area cultivated during the year under report is given below:—

Name of crop.	Area cultivated.	Total outturn.	Outturn per acre.	By-product.	Outturn of by-product (straw).
	B. K. Ch.	Md. sr. ch.	Md. sr. ch.		
D × L *aus* ..	11 16 0	25 24 0	6 19 0	Straw	Straw could not be dried and consequently it rotted.
Dharial *aus* ..	17 17 0	23 1 0	3 20 0	Straw	
Bhasmanik ..	21 10 0	38 34 0	5 21 0	Straw	
Jute (G.G.) ..	25 0 0	25 25 0	3 3 0	..	1,004 bundles.
Wheat ..	1 15 0	0 9 0	0 15 0	..	
Lentil ..	13 4 0	1 25 0	0 14 14	..	
Gram ..	9 10 0	1 0 0	3 6 0	..	
Peas ..	1 6 0	0 18 0	0 13 10	..	
	111 18 0				

The crops in both the seasons suffered a great deal from drought and hence the outturn of the crops was much below normal. The *rabi* crops almost all failed for the same reason.

It was decided by the Government to abolish the farm from April 1941, and hence no further expenditure was incurred for cultivation or other works of the farm.

Recommendations regarding the Government Farms.—(1) As a result of inspection and study of all the farms in this Circle, it may be stated that Chinsurah Farm is the only farm, which is serving the object of seed multiplication to some extent so far as the *aus* and *aman* paddy seeds are concerned. Even when all the *aus* seeds produced on this farm are utilised for seed purposes, the supply falls far short of the demand, and another big farm specially for the multiplication of *rabi* seeds, probably in the Nadia district, is considered necessary. As regards other farms, whose number is only five (including Midnapore Farm), it is well known that on each of these farms there is not even hundred bighas available for cultivation purposes. Again on two farms, viz., Bankura and Suri, more than half the cultivable area has been handed over to the Rice Research Section under the Imperial Council of Agricultural Research Scheme. A major portion of every farm has also to be reserved for experimental purposes. As such no area, worth the name, is available for seed multiplication. It is recommended, therefore, that the present farm areas should be extended so as to enable us to put at least 30 to 40 acres under recommended crops for seed multiplication. In other words, every farm should have three units as under:—

(1) The experimental unit.

(2) The rotation unit.

(3) The seed multiplication unit.

A Sub-Committee consisting of experts and the Deputy Director concerned should be appointed to visit every farm and determine on the spot, the areas and the layout for the above units according to the requirements of the district and if possible of the Circle. The area under seed multiplication may be run on economic basis, and no separate area need be reserved for getting data on cultivation on economic lines, as is being done at present.

(2) The question of staff, *i.e.*, what should be the minimum staff of Agricultural Demonstrators, and Overseers for a given area and for a particular farm may also be dealt with by the Sub-Committee mentioned above, as difficulties are already being experienced for shortage of staff of the right type and number on the farms in this Circle.

(3) Due to the erratic and short rainfalls during the latter portion of the year in recent years, the question of raising successful *rabi* crops is becoming a serious problem. Hence, provision of irrigation facilities should be made on every farm.

III. District Work.

A. **Demonstration Programme.**—(1) *Union Board Farms and Demonstration Centres Scheme.*—Under this scheme in every district are posted several Agricultural Demonstrators each of whom has a working circuit of 5 miles and has under his direct supervision one Union Board Farm and three Demonstration Centres.

A Union Board Farm is selected in a compact block of about 15 bighas under one private enthusiastic grower of means, for a period of three years, to serve the purpose of seed multiplication of departmental recommendation only, and for purposes of demonstration of such useful necessaries of farming as are within the easy reach of cultivators, e.g., preparation of artificial farmyard manure, composting of water-hyacinth, preparation of silage, *i.e.*, preservation under ground of fodder in green stage, to make it available in the winter months when green fodder is scarce. Every Union Board Farm is also required to have a *gola* for the purpose of storing seeds for distribution in the locality. Thus the Union Board Farm serves to form a link between the Department and the cultivators.

Round about this Union Board Farm, but within the 5 miles circuit of the Demonstrator are established 3 Demonstration Centres under a large number of cultivators of each place, liable to be changed from year to year, where departmental recommendations of seeds, manures, implements, etc., are actually demonstrated through the tiller of the soil under the direct supervision of the Agricultural Demonstrator. In this way the Department ultimately comes in direct contact with the actual tiller of the soil, and tries to broadcast effectively in a short time its recommendations amongst the peasant population.

This is the third year of the running of the scheme. There were 60 Union Board Farms and 163 Demonstration Centres in this Circle during the year under report. It may be noted here that out of the 60 Union Board Farms, 11 were worked by Jute Demonstrators, who worked part of the year, under the Jute Scheme. The total amount sanctioned for the Union Board Farms and Demonstration Centres was Rs. 6,327 and Rs. 10,292, respectively, of which Rs. 6,324-12-3 and Rs. 10,288-14-3 were actually spent.

The actual cropping scheme and demonstration programme followed is given below. The programme is open to modification to certain extent to suit local conditions.

(a) *Union Board Farms.*

Paddy	9 bighas (both *aus* and *aman*).
Jute	1 bigha (in jute-growing tracts only).
Groundnut	1 bigha (in place of jute in non-jute-growing area).
Fodder—	
Napier	½ bigha.
Joar, Maize or Cowpea ..	½ bigha.
Sugarcane	½ bigha (wherever new introduction is considered necessary).
Green manuring	Dhaincha or Sunnhemp or Cowpea on 3 bighas.
Gram ..	Rabi—1 bigha each.
Lentil ..	Rabi—1 bigha each.
Mustard ..	Rabi—1 bigha each.
Wheat ..	Rabi—1 bigha each.
Tobacco	10 K.
Potato	10 K.
English vegetables	10 K.

Special crops like linseed, peas and groundnut wherever possible.

Each owner of Union Board Farm is given a grant of Rs. 50 for the construction of a paddy *gola* and Rs. 10 for a manure shed for conservation of cowdung.

(*b*) *Demonstration Centres.*

Kharif.

Paddy—30 bighas (generally *aus* 6 bighas and *aman* 24 bighas).

Fodder—Napier, Joar, Maize or Cowpea ..	3 bighas.
Green manuring	5 bighas (if possible more).

Rabi.

Groundnuts—Gram, Lentil, Mustard, Tobacco	2 bighas each.
Wheat	1 bigha each.
Patnai peas	1 bigha each.
English vegetables	10 K.

There is also a provision for construction of one silo pit by each Agricultural Demonstrator. Preparation of artificial farmyard manure and water-hyacinth compost (wherever possible) have to be demonstrated at each centre. Demonstration of improved implements, viz., ploughs, handhoes, and of irrigation of crops are also undertaken in suitable places.

A list of Union Board Farms and Demonstration Centres is given in Appendix B(1). A statement showing the supply of seeds, manures, implements, etc., to Union Board Farms and Demonstration Centres would be found in Appendix B (2). Statement showing the names of the districts, the crops grown, along with their areas and yields for the total number of Union Board Farms and Demonstration Centres will be found in Appendix C.

Summary.—From my personal inspections of some of the Union Board Farms and Demonstration Centres and from reports from the Superintendent of Agriculture and other inspecting officers, it can now be definitely stated, that this scheme has proved to be of immense benefit to the cultivators of this province, who are gradually appreciating, consequent to the concrete results that each cultivator is actually getting the work done by the Agriculture Department.

Even in this adverse year, departmental recommended paddies have definitely yielded 3 maunds or more per acre, over the local ones. In many places also I found a keen interest developed about the preparation of artificial farmyard manure and silage, and people are there, who discuss the merits and demerits of the different system of preparation of manures. The introduction of new crops, as well, has been taken up in right earnest. The people, while appreciating every demonstration which is within his limited means, are beginning to show confidence and trust in the Department officer, which was found to be lacking two years before when the scheme was first instituted.

The real work that has been achieved by the introduction of the scheme, is not only the introduction of new crops and the fairly rapid spread of departmental recommendations, but also the bringing home to the cultivators that there exists an Agricultural Department in Bengal, which worked for the benefit of the poor humble raiyats.

How far the popularity of the Department has been increased by this scheme, will be evinced from the fact that the demand for paddy seeds especially for *aus* paddy, which may also be due to the regulation of Jute-growing Areas, was for several hundreds of maunds this year, but, in most cases had to be refused for want of supply. Further, the fact that many growers came to see me personally in Calcutta demanding seeds of specific departmental recommendations, is an achievement possible, only because of the scheme.

2. *Subsidy on seeds.*—In all civilised parts of the world an organisation of seed growers exist who maintain the purity and quality of agricultural products grown in the country. But unfortunately in Bengal, though paddy occupies about 90 per cent. of the cropped area, no such organisation exists. It may be because of the fact that paddy is both an economic and food crop, and the urgency is not felt by the agricultural population. It may also be due to the fact that paddy seeds are bulky and the transport facilities in Bengal are very meagre and defective.

But the necessity of always using good pure seeds of the best suitable varieties of a crop is well-known and this fact is being gradually brought home to the cultivator as without the use of good seed further advance in agriculture would not be rapid and possible. The Union Board Farms are being utilised to fill up this deficiency and incentives are given by providing suitable funds for preparation of *golas* where seeds of suitable recommended varieties have to be stored.

As the maintenance of purity requires special care and cost, the seed store is compensated by way of being given a premium for every maund of pure seeds of recommended varieties only, stored in the *gola* and utilised by sale, or exchange, for seed purposes only. For the present, the amount of premium given ranges from annas 4 to annas 8 for *aus* paddy, annas 2 to annas 4 for *aman* paddy, and annas 2 to annas 4 for *rabi* seeds per maund. This system has been found to be very efficacious. The total amount spent on premium for "Subsidy", as it is called, is Rs. 1,094-10 during the year under report.

(3) *Exhibitions.*—This is another method of coming in contact with a larger section of public and actual tillers of the soil, which is fully taken advantage of by the department. The department participates in one or two exhibitions in a district approved of by the Collector, where all agricultural activities concerning the district in question are fully demonstrated to all the visitors.

Contributions, in the shape of money, to a large number of exhibitions on recommendations of the Collectors, are granted by the Department as an impetus and aid for holding such exhibitions. In order to give an incentive to cultivators for growing better crops, rearing better breeds of cattle and poultry, and for adopting general agricultural methods, as approved of by the department, suitable prizes in shape of seeds, manures, implements, etc., are given to the best exhibitors as recommended by the Exhibition Committee.

A sum of Rs. 965 was spent during the year towards contribution and a sum of Rs. 2,222-3 was spent towards prizes in this circle.

A list of exhibitions held during the year in this Circle will be found in Appendix D.

A statement showing the articles distributed as prizes with their quantity and number would be found in Appendix E.

(4) *Lectures.*—Opportunities are almost always availed of by the officers of this Department, while on tour, or during exhibitions, or when any special organisations held through the agencies of Rural Reconstruction Camps, public bodies, and District Boards, etc., to deliver suitable lectures on agriculture and allied subjects. Such lectures are in many cases delivered accompanied with suitable illustrious or magic lantern slides or gramophone records. It may be noted here that magic lantern demonstrations are getting out of date with the advent of the cinema, and, therefore, some other suitable media to make the lectures interesting and popular should be found out to bring home to the villager the up-to-date activities of the Agriculture Department.

Appendix F shows the total number of lectures given and the number of people attending the same.

(5) *Preparation of artificial farmyard manure and silage.*—Demonstrations in the preparation of artificial farmyard manure and silage were undertaken both in the Government farms, as well as in the districts. The quantities prepared would be found in Appendix G.

(6) *Cultivation of Napier and other fodder crops.*—Demonstrations in the introduction of fodder crops like Napier grass, joar and maize were undertaken.

It may be noted here that the cultivation of fodder crops is gradually but steadily increasing and growers are understanding the importance of green fodders for the maintenance of cattle in good condition.

(7) *Miscellaneous demonstrations.*—(*a*) Demonstration of palmyra palm tapping and preparation of *gur* from the juice was undertaken in the Bankura district. Three tappers for three months from January to March at 3 centres in Sadar and Vishnupur subdivisions, taught local cultivators process of tapping and preparation of *gur* from juice of Palmyra palm. A sum of Rs. 360 was sanctioned for this purpose.

(*b*) Twenty demonstrations on the working of the McGlashan furnace were undertaken in the Bankura district. About 300 cultivators attended these demonstrations.

(*c*) Introduction of Dacca No. I cotton at Basudevpur Court of Ward's Estate in the Midnapore district has given satisfactory results; 17 cottahs of land have yielded seed cotton at the rate of 5 maunds per bigha.

(*d*) Besides the Second Economic Botanist's cotton centres in Bankura, Midnapore and Berhampore, as under the cotton scheme, cotton was also grown in almost all the districts except Jessore, Khulna and Hooghly in this Circle.

(*e*) First Economic Botanist's introduction of Patnai G 23 paddy was undertaken in the six districts of 24-Parganas, Jessore, Bankura, Burdwan, Hooghly and Khulna, where a quantity of 134 maunds 10 seers of this was distributed.

(*f*) Second Economic Botanist's mustard multiplication scheme was undertaken at Nimtita in Berhampore. Besides this, 81 maunds 10 seers of Rai 5 and 40 maunds of Tori 7 were distributed for seed multiplication in this Circle.

(g) Under Live-stock Expert's fodder multiplication scheme 148 maunds 20 seers joar and 117 maunds 20 seers of maize were distributed in this Circle.

(h) In order to restrict jute under the Jute Regulation Scheme, 400 maunds of groundnut and 150 of joar seeds were distributed in the jute-growing tracts of this Circle.

(i) 380 tolas of Motihari tobacco seeds were distributed in this Circle for economic tobacco cultivation in this Circle.

(j) Cultivation of flax was also undertaken on an area of 110 bighas for demonstration purposes in Berhampore under the guidance of the Assistant Fibre Expert.

(k) *Demonstration of irrigation on crops.*—One irrigation scheme has been taken up in Raipur police-station in the Sadar subdivision of Bankura by the enterprise of local bodies.

(l) *Demonstration of improved implements.*—The working of the following improved ploughs was demonstrated in Jessore:—

(a) Peterson's light wooden beam plough.

(b) Peterson's Bengal No. 1 steel plough.

(c) Peterson's "Dacca" wooden plough.

(d) Peterson's light steel plough type "D".

All these ploughs worked very well and all four are very suitable for alluvial soils and the cattle of Bengal.

B. **Activities of the Khas Mahals, Wards' Estates, District Boards, Agricultural Association and Agricultural Co-operative bodies, etc.**—A detailed statement would be found in Appendix H.

C. **Private seeds farms.**—The activities and number of important private seed farms are noted below district by district. All the farms take departmental advice whenever necessary and follow departmental recommendations:—

(1) *Bankura.*—(i) Porashia Farm owned by Dr. N. M. Chowdhury of Calcutta.

(ii) Natungram Farm owned by Babu Haripada Kundu of Santore, Nutangram.

(iii) Sanbanda Farm owned by Babu Dhruba Taran Paul, of Sanbanda.

(iv) Mobarakpur Farm owned by Babu Patal Mukherjee.

(v) Sunukpahari Farm owned by Babu Sarada Prasad Datta.

(vi) Gorabari Farm owned by Babu Mritunjoy Sahu.

(vii) Jambani Farm owned by Babu Krishna Chandra Pal.

(viii) Babu Hari Pado Dana owns a Farm at Kankata.

(ix) Babu Haripada Nandi owns a Farm at Banshi.

(x) Rai S. K. Sahana Bahadur owns a Mixed Farm at Kenduadihi.

(xi) Babu Mregendra Nath Haldar owns a Farm at Sarenga.

(xii) Babu Banamali Mahapatra owns a Farm at Damdih (Raipur).

(*xiii*) Babu Lalit Mohan Trivedi owns a Farm at Saluni.

(*xiv*) The Enari Agricultural Horticultural Farm by Babu S. I. Mukherji at Jhantipahari.

(*xv*) Babu Ram Saran Mukherjee owns a Farm at Jhantipahari.

(*xvi*) Babu Narendra Nath Bose owns a Farm at Supur, Rajagram.

(*xvii*) Babu Bijoy Narayan Hazra owns a Farm at Mandiha-Kesebpur.

(*xviii*) Babu Hari Biswas owns a Farm at Tellya (Onda).

(*xix*) Babu Bholanath Chakraberty owns a Farm at Swadista (Onda).

(*xx*) Babu Abinash Pal owns a Farm at Uttar-bada (Onda).

(*xxi*) Makerkole Farm owned by Babu Mahendra Ch. Dana.

(*xxii*) Bansi Farm owned by Babu Haripada Nandi.

(*xxiii*) Natangram Farm owned by Babu Akinchan Kundu.

(*xxiv*) Raibada Farm (Onda) owned by Babu Bhudev Basu.

(*xxv*) Gobindapur Farm owned by Babu Nihar Ranjan Chatterjee.

(*xxvi*) Rajagram Farm owned by Babu Debendra Nath Patra.

(*xxvii*) Supur Farm owned by Babu Rakhal Kundu.

(2) *Midnapore*.—Manikapal Farm owned by Babu Jogendra Narayan Sahas Ray—Area 44 acres.

(3) *Howrah*.—(*i*) Lillooah Farm—Babu Anurudha Bhatta—Area 1,000 bighas.

(*ii*) Kona Farm—Babu Atindra N. Dey—Area 20 bighas.

(*iii*) Ayama Farm—Babu Ramjiban Gochhait—Area 20 bighas.

(*iv*) Bhagawanpur Farm—Babu Prankrishna Jana.

(*v*) Gulamutha Farm—Babu Jatindra N. Dandapot.

(*vi*) Lillooah Goshala Farm—Calcutta Pinjrapole Society.

(*vii*) Hindu Abala Ashram Farm.

(4) *Hooghly*.—(*i*) Makalpur Farm owned by Babu Monmohan Singh Roy.

(*ii*) Jangipara Farm owned by Babu Brindaban Singh Roy.

(*iii*) Sreerampur Farm owned by Kanai Lal Goswami, M.L.C.

(*iv*) Choubara Farm owned by Babu Chandra Mohan Mukherjee.

(5) *Birbhum*.—(*i*) Sultanpur Farm—Area 160 acres, owned by Rai Bahadur A. C. Banerjee, C.I.E.

(*ii*) Sankarpur Farm—150 acres—owned by Molla family.

(*iii*) Labpur Farm—150 acres—owned by Babu N. M. Banerjee.

(*iv*) Khatipur Farm—60 acres—owned by Maulvi Md. Siddique Ahmed.

(*v*) Surul Farm—20 acres—owned by Visva Bharati.

(*vi*) Nandulia Farm—50 acres—owned by Babu R. K. Mukherjee.

(6) *Berhampore.*—(*i*) Ramnuggar Farm—Cane and Sugar Co., Ltd. -Area 4,000 bighas.

(*ii*) Sri Radha Krishna Sugar Mills Farm at Bainjitia, Sargachi, Jibannagar and Rejinagar.

(*iii*) Sree Krishna Nivas owned by Babu Makhan Lal Roy.

(*iv*) Raja Kamala Ranjan Roy's Farm.

(*v*) Farm of the State of the Nawab Bahadur of Murshidabad.

(*vi*) Farm of Raja of Nasipur.

(*vii*) Farm of Dr. B. D. Mukherjee at Simulia.

(*viii*) Farm of Rai Sahib Shyamapada Bhattacharya.

(*ix*) Farm of Rai J. N. Choudhury Bahadur, Nimtita.

(7) *Nadia.*—(*i*) Jahangirpur Samabaya Krishi Samity—Area 250 bighas.

(*ii*) Yarabaria Samabaya Krishi Samity—Area 200 bighas.

(*iii*) Raipura Samabaya Krishi Samity—Area 100 bighas.

(*iv*) Amjhupi Farm—Area 50 bighas.

(*v*) Ramnuggar Farm—1,000 bighas.

(*vi*) Candipur Krishi Khetra at Bheramara—80 bighas.

(*vii*) Chitalia Farm, Bheramara—Area 70 bighas.

(*viii*) Subarnabibar Farm, Maheshganj—100 bighas.

(*ix*) Sambhunagar Farm, 3,000 bighas.

(*x*) Chuadanga Farm—30 bighas.

(*xi*) Tentia Farm—100 bighas.

(8) *Jessore.*—(*i*) Manjhipara Farm owned by Babu Panchanan Roy.

(*ii*) Chandpara Farm owned by Babu Hemendra Lal Guha Roy.

(*iii*) Kalachand Biswas Farm at Bongaon.

(*iv*) Kanai Mandal's Farm at Bongaon.

(*v*) Lakshman Chandra Biswas's Farm at Jhikargacha.

(*vi*) Basanta Kumar Ghosh's Farm, Jhikargacha.

(*vii*) Shawkat Farm owned by Md. Abdul Ghani.

(9) *Khulna.*—(*i*) Ranbijoypur Farm at Bagerhat.

(*ii*) Singhati Farm owned by Maulvi Yakub Uddin Khondkar at Bagerhat.

(*iii*) Ghoshbati Farm owned by Babu S. N. Ghosh.

(*iv*) Jaigir Mahal Farm owned by Maulvi Kamiruddin Ahmed.

(10) *24-Parganas.*—(1) Gosaba Farm (owned by late Sir Daniel Hamilton)—area 12 acres.—All the expenses are met from the estate of late Sir Daniel Hamilton, except the maintenance of Class II—Subordinate Agricultural Service officer at the farm, which is borne by the Bengal Government.

Varietal tests of *aman* paddies are carried out here. The recommended varieties of all departmental crops including *aus*, sugarcane, jute, maize, cotton, arhar, tobacco, English vegetables, etc., are also grown for demonstration.

There were 60 inches of rain spread over 108 days against a 74 inches normal. The deficiency of rainfall in the month of July did not allow of timely transplanting in medium and high lands. Strong wind accompanied by showers on the 22nd of October affected the yield of paddy. Season was not favourable for *rabi* crops.

Seeds, manures and seedlings are distributed both free as well as on cash payment amongst the tenants.

Two hundred maunds of artificial farmyard manure were prepared. There was a profit of Rs. 46-5-3 on an expenditure of Rs. 484-7-3.

(2) Barrackpore Farm—owned by Babu J. N. Gupta and managed by the University of Calcutta for training of students in Agriculture. Area 100 bighas.

(3) Demonstration Farms of Port Canning Zamindary Company at Pathankali, Ramchandrakhali and Amghora.—The Zamindary maintains one Overseer and three Demonstrators.

(4) The Bengal Central Agricultural Mixed Farm at Kamdevkati.

(5) The Haripur Farmer's Syndicate Farm.

(6) Diamond Harbour Poultry Farm.

D. **Government Seed Stores.**—Every Government farm has a seed store attached to it, through the medium of which seeds of recommended varieties, cuttings of sugarcane and Napier grass, suckers, implements and manures are supplied to meet requisitions received. Appendix I shows the transactions of the different seed stores in this circle.

E. **Disposal of seeds, cuttings, etc., produced on Government farms.**—Most of the produce at the Government farms is utilised for introduction of recommended crops in the districts. Appendix J shows the produce and supply of seeds, etc., on Government farms during 1940-41.

F. **Distribution of seeds for special purposes.**—When new varieties of crops have to be introduced in a district, which are found suitable for introduction, free supplies of seeds of these recommended varieties are undertaken to selected enthusiastic growers. Supplies are also undertaken against special schemes, e.g., the Jute Regulation Scheme to induce the cultivators to replace jute by substitute crops of economic or revenue nature such as groundnut, fodder, crops, etc. A statement of all such free supplies will be found in Appendix K.

Summary of activities in the Circle.—The Appendix L gives a statement of supplies of seeds, plants, manures, and implements introduced in the districts of Western Circle during the year 1940-41.

Acknowledgments.—Our thanks are due to the ever-increasing number of officials and non-officials who gave ungrudging help and extended full sympathy and active support for improving the general agricultural conditions of this Circle by personally taking keen interest in the departmental activities. As it is not possible to acknowledge the kind of services of everyone individually in such a short space, only

a few names are mentioned. Amongst the officials, the following may be mentioned:—

(1) Mr. A. K. Ghosh, I.C.S.
(2) Mr. E. F. McInery, I.C.S.
(3) Rai Binod Behari Sarker Bahadur.
(4) Khan Bahadur Mahammad Mahmud.
(5) Mr. N. M. Khan, I.C.S.
(6) Mr. K. A. L. Hill, I.C.S.

Amongst non-officials:—

(1) Rai Sahib Charu Chandra Pal.
(2) Babu Anurudha Bhatta.
(3) Mr. K. C. Sanyal.
(4) Mr. M. Sinha Roy, of Makalpur.
(5) Rai Bahadur J. N. Choudhury of Nimtita.
(6) Khan Bahadur Ataur Rahman, M.L.C.

The District Agricultural Staff rendered ungrudging help and co-operation, and I take this opportunity of extending my sincere thanks for their services.

The office staff worked hard and even overtime to cope with the ever-increasing work that we are being called on to undertake with the expansion of the general activities of the Department, and I take this opportunity to thank them.

S. G. SHARANGAPANI,

Deputy Director of Agriculture, Western Circle.

APPENDIX A.

Statement showing the number of staff employed in the districts during the year 1940-41.

District.	Bankura.	Midnapore	Howrah.	Hooghly.	Burdwan.	Birbhum.	Murshidabad.	Nadia.	Jessore.	Khulna.	24-Parganas.	Chinsurah Farm.
Staff—Subordinate Agricultural Service (District Agricultural Officers).	1	1	1	1	1	1	1	1	1	1	1	1
Lower Subordinate Agricultural Service (Grade I—Overseer)—Departmental.	..	..	..	..	..	..	1	..	..	..	..	
Jute	..	..	..	..	..	..	..	1	1	..	1	..
Lower Grade II (Demonstrator)—												
Departmental	3	7	3	4	6	5	4	4	5	3	4	..
Jute	..	..	1	1	1	..	1	2	1	2	2	..
Khasmahal	..	..	..	1	..	..	..	..	..	1	1	..
Court of Wards	1	..	1	1	..	..	3	..	..	..	3	..
District Boards	..	..	..	..	..	..	..	..	..	..	..	..
Collector's Scheme ..	..	..	..	..	..	..	..	..	..	..	..	..
Agricultural Association, etc.	..	..	..	..	..	..	..	..	..	..	..	..
Private estates	..	..	..	..	..	..	1	..	..	..	..	..
Cotton Demonstrators ..	1	1	..	..	..	..	1	1	..	..	..	..
Mustard Scheme Demonstrator	..	..	..	..	..	..	1	..	..	..	..	..
Clerk of subordinate offices—Farm clerks.	1	1	..	..	..	1	1	1	..	..	..	1

APPENDIX B(1).

Statement showing the details of Union Board Farms and Demonstration Centres in each district during the year 1940-41.

District.	Agricultural Demonstrator's Headquarters.	Names of— Union Board Farms.	Names of— Demonstration Centres.
(1) Bankura.			
2 Union Board Farms. 7 Demonstration Centres.	(1) Onda ..	(1) Sarberia ..	(1) Onda. (2) Makerkole. (3) Ramsagar.
	(2) Peardoba ..	(2) Chanchore ..	(4) Bankadaha. (5) Chotabankadaha. (6) Chitrong. (7) Banshi.
	(3) Sadar ..		
(2) Midnapore.			
7 Union Board Farms. 16 Demonstration Centres.	(1) Sadar ..	(1) Ghurnidaha ..	Nil.
	(2) Bhimpur ..	(2) Dhanghari ..	(1) Shirshi. (2) Nere. (3) Ballibund. (4) Bamal.
	(3) Lalgar ..	(3) Bagghora ..	
	(4) Khirpai ..	(4) Haimanpapur ..	(5) Kushkuli. (6) Jagannathpur. (7) Shyamganj.
	(5) Dahijuri ..	(5) Betkundri ..	(8) Rashmandal-Salchaturi. (9) Jainagar. (10) Dahijuri.
	(6) Gidney ..	(6) Dhunamari ..	(11) Dhangbahera. (12) Nunia. (13) Beldangri.
	(7) Mahishadal ..	(7) Mahishadal ..	(14) Dhooribari. (15) Keshabpur-Jalpai. (16) Bagda.
(3) Howrah.			
4 Union Board Farms. 10 Demonstration Centres.	(1) Sadar ..	(1) Golabari ..	(1) Kona.
	(2) Domjur ..	(2) Uttar Japardah	(2) Domjur. (3) Uttar Japardah. (4) Dakshin Japardah.
	(3) Bagnan ..	(3) Golamutha ..	(5) Khadinan. (6) Pipulyan. (7) Hetampur.
	(4) Amta ..	(4) Bhojan ..	(8) Baramahara. (9) Thalia. (10) Amta.

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District.	Agricultural Demonstrator's Headquarters.	Names of— Union Board Farms.	Names of— Demonstration Centres.
(4) Hooghly.			
5 Union Board Farms. 14 Demonstration Centres.	(1) Sadar ..	(1) Devanandapur changed later on to Purushattambati.	(1) Iswaribagh.
	(2) Arambagh ..	(2) Daulatpur ..	(2) Balibela. (3) Chatra. (4) Kastadha.
	(3) Singur ..	(3) Ratanpur ..	(5) Balaigacha. (6) Dalaigacha. (7) Purushattampur.
	(4) Dwarbashini ..	(4) Dwarbashini ..	(8) Saticham. (9) Kamtai. (10) Maharad.
	(5) Tarakeswar ..	(5) Gure-Bhata ..	(11) Bhimpur. (12) Bhanjipur. (13) Baidyapur.
	(6) Arthi (C. W. A. D.)	Nil	(14) Tirra.
(5) Burdwan.			
6 Union Board Farms.	(1) Katwa ..	(1) Sresura ..	(1) Jagigram. (2) Bandra. (3) Nawanagar.
15 Demonstration Centres.	(2) Asansol ..	(2) Bardanga ..	(4) Bhanora. (5) Madhanpur. (6) Kharbor.
	(3) Memari ..	(3) Gantar ..	(7) Kenuya. (8) Mogra. (9) Nimo.
	(4) Galsi ..	(4) Adra ..	(10) Irkona. (11) Khuturi. (12) Uro.
	(5) Kalna ..	(5) Dhatrigram ..	(13) Krishnadevpur. (14) Pearinagar. (15) Tamashpur.
	(6) Sadar ..	(6) Bonabad.	

District.	Agricultural Demonstrator's Headquarters.	Names of— Union Board Farms.	Names of— Demonstration Centres.
(6) Birbhum.			
5 Union Board Farms.	(1) Ramuprhat ..	(1) Joykristhtapur	(1) Kaluha. (2) Dakhalbati. (3) Margram.
15 Demonstration Centres.	(2) Sultanpur ..	(2) Khtipur ..	(4) Imadpur. (5) Domaipur. (6) Hatikra.
	(3) Bolepur ..	(3) Surul ..	(7) Puruldanga. (8) Berugram. (9) Raipur.
	(4) Dubrajpur ..	(4) Panchra ..	(10) Joshpur. (11) Chandipur. (12) Chinpal.
	(5) Sadar ..	(5) Panuria ..	(13) Adda. (14) Lombadarpur. (15) Sankarpur.
(7) Murshidabad.			
5 Union Board Farms.	(1) Saktipur ..	(1) Saktipur ..	(1) Chowrigacha. (2) Tenya. (3) Sompara.
15 Demonstration Centres.	(2) Sagardighi ..	(2) Chanugaon ..	(4) Sagardighi. (5) Manigram. (6) Jugore.
	(3) Bhagwangola ..	(3) Fatehpur ..	(7) Daulatpur. (8) Balipara. (9) Bhagwangola.
	(4) Kandi ..	(4) Purandarpur ..	(10) Rasarah. (11) Balia. (12) Kharsa.
	(5) Nimtita ..	(5) Nimtita ..	(13) Suritala. (14) Raghunathpur. (15) Jadunandanpur.
(8) Nadia.			
6 Union Board Farms.	(1) Sadar ..	(1) Tentia ..	(1) Dignagar. (2) Bagdia. (3) Kaya.
18 Demonstration Centres.	(2) Chuadanga ..	(2) Alkadia ..	(4) Dhejuria. (5) Samordia. (6) Hajra-hati.

District.	Agricultural Demonstrator's Headquarters.	Names of— Union Board Farms.	Names of— Demonstration Centres.
	(3) Meherpur ..	(3) Raipur ..	(7) Monakhali. (8) Gopalpur. (9) Chandbil.
	(4) Badkully ..	(4) Bartoil ..	(10) Kalishankarpur. (11) Barkhada. (12) Raidanga and Ghatia.
	(5) Ranaghat ..	(5) Ayestola ..	(13) Patuli. (14) Muragacha. (15) Rajapur-Debinagar.
	(6) Bharamera ..	(6) Bamanpara ..	(16) Chandipur. (17) Bhowanipur. (18) Damukdia.
(9) Jessore.			
7 Union Board Farms. 20 Demonstration Centres.	(1) Jessore .. (2) Bongaon ..	(1) Daulatpur .. (2) Haridaspur ..	(1) Sheikhati. (2) Daccapara. (3) Kazipara. (4) Paikpara.
	(3) Keshabpur ..	(3) Maguradanga ..	(5) Brahmankati. (6) Bazitpur. (7) Shujapur.
	(4) Jhenidah ..	(4) Jhenidah ..	(8) Gayeshpur. (9) Gillabari. (10) Bhuteagacha.
	(5) Magura ..	(5) Atharakhanda	(11) Kashinathpur. (12) Bogia. (13) Narihati. (14) Lakshmipasha.
	(6) Jhikargacha ..	(6) Jhikargacha ..	(15) Cowria. (16) Barbakpur. (17) Lonjani.
	(7) Jessore-Sadar	(7) Ganganandapur	(18) Ulashi. (19) Tegharia. (20) Kazipara.

District.	Agricultural Demonstrator's Headquarters.	Names of— Union Board Farms.	Names of— Demonstration Centres.
(10) Khulna.			
5 Union Board Farms.	(1) Fakirhat ..	(1) Jaygachi-Rajput.	(1) Hajrakhali. (2) Kula. (3) Jatrapur.
13 Demonstration Centres.	(2) Patkelghata ..	(2) Baikshia ..	(4) Kashipur. (5) Shakdia. (6) Katakhali.
	(3) Sadar ..	(3) Naihati-Srirampur.	(7) Tilak. (8) Senhati.
	(4) Mollahat ..	(4) Sasan ..	(9) Kadamtala. (10) Garfa.
	(5) Kalaroa ..	(5) Kayla ..	(11) Bamankati. (12) Gochmara. (13) Mirjapur.
(11) 24-Parganas.			
7 Union Board Farms. 20 Demonstration Centres.	(1) Diamond Har-Harbour.	(1) Mankhanda ..	(1) Diamond Harbour. (2) Sarisha. (3) Kamarpole. (4) Mathur.
	(2) Baraset ..	(2) Ardibak ..	(5) Banamalipur. (6) Suripuker. (7) Haripore.
	(3) Dakshin Chatra	(3) Kamdebkati ..	(8) Dakshin Chatra. (9) Ghoshpur. (10) Maslandpur.
	(4) Kowgachi ..	(4) Kowgachi ..	(11) Basudebpur. (12) Mathurapur. (13) Paltapara.
	(5) Basirhat ..	(5) Naihati ..	(14) Raghunathpur. (15) Dandirhat. (16) Golaichandi.
	(6) Dhankuria ..	(6) Nadia ..	(17) Jadurhati. (18) Nehalpur. (19) Kaehua.
	(7) Alipore ..	(7) Jadabpur.	
	(8) Daria (W. Estate).		(20) Daria.

APPENDIX B(2).

Statement showing supply of seeds, manures and Implements, etc., to the Union Board Farms and Demonstration Centres during 1940-41.

Districts.	Bankura.	Midnapore.	Howrah.	Hooghly.	Burdwan.	Birbhum.	Murshidabad.	Nadia.	Jessore.	Khulna.	24-Parganas.
—	Union Board Farms 2, Demonstration Centres 7.	Union Board Farms 7, Demonstration Centres 16.	Union Board Farms 4, Demonstration Centres 10.	Union Board Farms 5, Demonstration Centres 14.	Union Board Farms 6, Demonstration Centres 15.	Union Board Farms 6, Demonstration Centres 15.	Union Board Farms 5, Demonstration Centres 15.	Union Board Farms 6. Demonstration Centres 15.	Union Board Farms 7, Demonstration Centres 20.	Union Board Farms 5, Demonstration Centres 13.	Union Board Farms 7, Demonstration Centres 20.
	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Seeds.											
Aus paddy ..	5 20 0	2 0 0	0 26 0	4 5 0	..	9 0 0	66 0 0	38 0 0	21 29 0	22 20 0	37 0 0
Aman paddy ..	21 30 0	44 37 0	42 0 0	22 5 0	55 18 0	36 0 0	40 20 0	33 12 8	65 15 0	25 35 0	8 25 0
Patnai paddy ..	..	..	..	..	..	..	..	..	..	..	23 25 0
Pea ..	..	..	0 28 0	7 24 0	..	..	..	..	10 32 0	..	..
Maize ..	..	30 0 0	..	14 0 0	0 12 8	1 20 0	0 25 0	..	2 15 0	3 30 0	..
Joar ..	3 8 0	..	0 30 0	..	2 10 0	6 20 0	9 0 0	9 20 0	1 7 8	..	4 32 0
Cowpea ..	..	..	..	..	1 20 0	..	3 0 0	..	2 32 0	..	3 32 0
Sugarcane cuttings	18,000 Nos.	..	..	6,000 Nos.	..	..	..	..	..	..	68,000 Nos.
Napier cuttings ..	3,000 ,,	4 0 0	16 0 0	14 0 0	16 0 0	..	40 0 0	8 0 0	32 0 0	96 0 0	92 0 0
Gram ..	2 32 0	..	0 21 0	11 28 8	8 35 0	..	5 30 0	8 2 0	..	22 37 0	9 18 0
Lentil ..	1 0 0	..	4 20 0	2 23 0	4 11 0	2 16 0	2 16 0	3 0 0	9 15 0	3 35 0	5 4 0
Mustard ..	1 32 0	..	0 22 0	1 26 0	36 36 2	0 10 0	0 24 0	3 0 0	5 8 0	0 38 0	..
Linseed ..	..	..	2 38 0	0 12 0	0 17 0	..	1 28 0	..	0 24 0	1 20 0	28 0 0
[illegible] ..	[illegible]	[illegible]	..	0 25 0	..	..	5 0 0	2 15 0	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	48 ozs.	92 ozs.	..	..	22 lbs. 2 ozs.	Worth Rs. 150-11	Worth Rs. 18	Worth Rs. 100-11.

English vegetables	67 packets	118½ ozs. 17 packets.	7½ ozs.	48 ozs.	92 ozs.	..	..	22 lbs. 2 ozs.	Worth Rs. 180-11	Worth Rs. 18	Worth Rs. 100-11.
Dhaincha ..	..	76 0 0	..	..	30 22 8	..	..	0 34 0	..	..	9 10 0
Potato ..	..	10 20 0	..	..	..	..	2 0 0	..	..	..	..
Wheat ..	31 0 0	2 0 0	0 15 8	8 20 0	16 2 0	..	5 20 0	3 39 0	3 10 0	..	10 5 0
Motihari tobacco ..	36½ tolas	..	12½ tolas	57 tolas	6 tolas	375 tolas	17½ tolas	21½ tolas	103½ tolas	19 tolas	52 tolas.
Jute ..	..	..	0 3 12	..	..	..	0 5 0	0 4 0	0 1 4	0 2 0	0 4 0
Comilla Rahar ..	0 10 0	..	..	..	0 30 0	0 6 0	..	2 16 0	..	..	..
Manures.											
Bonemeal ..	37 0 0	70 0 0	..	50 0 0	15 0 0	40 0 0	27 0 0	..	14 0 0	60 8 0	..
Castor cake ..	6 0 0	..	5 20 0	46 0 0	..	55 0 0	8 30 0	..	18 20 0	34 0 0	170 0 0
Nicifos ..	5 25 0	10 0 0	24 28 0	14 22 0	..	17 20 0	16 0 0	96 0 0	5 16 0	..	22 cwts.
Amm. Sulphate ..	..	1 5 0	..	14 0 0	26 30 0	2 20 0	..	..	..	18 0 0	..
Amm. Phos.	7 15 0	..	..	..	..	..	15 0 0	..	..	..	..
Implements.											
Ploughs ..	8 Nos.	..	4 Nos.	3 Nos.	..	6 Nos.	..	3 Nos.	26 Nos.	..	9 Nos.
Handhoes ..	8 ,,	..	4 ,,	..	..	2 ,,	12 Nos.	5 ,,	6 ,,	..	..
Rakes ..	..	..	9 ,,	..	..	6 ,,	..	..	..	..	..
Iron Don ..	7 Nos.	8 Nos.	4 ,,	..	..	..	..	5 Nos.	..	..	2 Nos.
Watering can ..	2 ,,	7 ,,	4 ,,	3 Nos.	7 Nos.	5 Nos.	..	..	6 ,,	5 Nos.	9 ,,
Measuring tape ..	..	7 ,,	4 ,,	..	5 ,,	..	..	..	..	..	9 ,,
Petri dishes	..	..	18 ,,	..	..	..	..	..	..	..	..
Kodali (Potato)	..	..	..	..	78 ,,	..	..	..	..	..	..
Spade (Fork)	7 Nos.	..	..	..	..	6 Nos.	..	..	..	..	..
Spraying syringe ..	..	..	..	..	..	4 ,,	..	..	..	..	..
Manure pit ..	2 Nos.	5 Nos.	..	1 No.	..	2 ,,	1 No.	2 Nos.	2 Nos.	3 Nos.	3 Nos.
Paddy Gola ..	..	4 ,,	..	1 ,,	1 No.	2 ,,	1 ,,	2 ,,	2 ,,	3 ,,	3 ,,
Country balance ..	..	7 ,,	..	..	6 Nos.	..	..	..	..	5 ,,	..

APPENDIX C.

Statement showing the kharif crops grown along with areas and outturns in the Union Board Farms and Demonstration Centres of each district.

Name of district.	Total number of Union Board Farms and Demonstration Centres.	*Aus* paddy.		*Aman* paddy.		Maize fodder.		Joar fodder.	
		Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.
			Md. sr.		Md. sr.		Md. sr.		Md. sr.
Bankura	2 Union Board Farms and 7 Demonstration Centres.	16·0	338 35	60·0	1,513 28	Nil	..	5·32	911 0
Midnapore	7 Union Board Farms and 16 Demonstration Centres.	32·45	618·13	194·51	4,163 31	16·88	1,163 27	9·90	991 20
Howrah	4 Union Board Farms and 10 Demonstration Centres.	·66	8 20	100·74	2,586 9	Nil	..	65·55	1,619 5
Hooghly	6 Union Board Farms and 14 Demonstration Centres.	5·84	89 0	7·94	163 0	·50	144 0	·5	178 0
Burdwan	6 Union Board Farms and 15 Demonstration Centres.	25·66	Failed	154·33	3,138 26	1·49	153 27	2·0	600 0
Birbhum	5 Union Board Farms and 15 Demonstration Centres.	Not grown	..	166·73	2,766 4	..	..	11·86	1,597 0
Murshidabad ..	5 Union Board Farms and 15 Demonstration Centres.	66·0	584 10	99·0	2,364 36	·66	186 0	5·0	2,469 20
Nadia	6 Union Board Farms and 18 Demonstration Centres.	51·99	644 11	27·33	444 19	Nil	..	12·66	6,809 35
Jessore	7 Union Board Farms and 20 Demonstration Centres.	24·66	731 0	107·72	1,467 0	4·48	541 0	2·16	340 0
Khulna	5 Union Board Farms and 13 Demonstration Centres.	22·0	465 24	57·33	1,209 20	2·25	680 0	Nil	..
24-Parganas ..	7 Union Board Farms and 19 Demonstration Centres.	37·92	759 7	154·99	3,868 37	Nil	..	7·83	1,912 20

APPENDIX C—*continued.*

Name of district.	Total number of Union Board Farms and Demonstration Centres.	Napair grass.		Jute.		Groundnut.		Arhar.	
		Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.
			Md. sr.		Md. sr.		Md. sr.		Md. sr.
Bankura	2 Union Board Farms and 7 Demonstration Centres.	2·66	560 0	Nil	..	2·99	48 17	..	..
Midnapore	7 Union Board Farms and 16 Demonstration Centres.	·77	188 30	Nil	..	5·38	101 3	..	..
Howrah	4 Union Board Farms and 10 Demonstration Centres.	·49	94 0	1·0	15 30	Nil	..	..	..
Hooghly	6 Union Board Farms and 14 Demonstration Centres.	·41	100 0	1·0	21 20	·41	2 5	..	..
Burdwan	6 Union Board Farms and 15 Demonstration Centres.	Nil	..	Nil	..	1·15	23 33	2·0	9 35
Birbhum	5 Union Board Farms and 15 Demonstration Centres.	0·4	530 30	..	..	..	..	..	..
Murshidabad ..	5 Union Board Farms and 15 Demonstration Centres.	2·66	2,052 0	·66	13 26	5·88	41 4	..	..
Nadia	6 Union Board Farms and 18 Demonstration Centres.	Nil	..	1·33	22 32	2·66	28 4	16·0	155 24
Jessore	7 Union Board Farms and 20 Demonstration Centres.	1·26	295 0	Nil	..	2·33	8 15	..	..
Khulna	5 Union Board Farms and 13 Demonstration Centres.	Nil	..	1·33	38 20	1·66	17 5	..	..
24-Parganas ..	7 Union Board Farms and 19 Demonstration Centres.	8·32	2,483 15	1·35	25 31	4·99	52 33	..	..

N.B.—It may be noted here that in the case of *aus* paddy 18·82 acres and 12·67 acres were damaged due to drought in the districts of Hooghly and Jessore, respectively; in the case of *aman* crop 8·36 acres, 112·66 acres, 63·94 acres and 11·67 acres were damaged in the districts of Hooghly, Nadia, Jessore and Khulna, respectively.

The following departmental varieties of paddy were grown :—

Aus paddy—Charnock, Dharial, Dhalasaita, D×L Marichbetty, Kataktara and Surjamukhi.

Aman paddies—Patnai G. 23, Badkalamkati 65, Boldar, Dadkhani, Jhingasail, Dudhsar, Bhasamanik, Nagra, Tilakkachery, Hatisal, Sindurmukhi S. A. T., and Nonaramsail.

In the case of Napier grass, figures have not been given wherever new plantations had been undertaken.

APPENDIX C—*continued.*

A statement showing the rabi crops grown along with areas and outturns in the Union Board Farms and Demonstration Centres of each district, 1940-41.

Name of districts.	Total number of Union Board Farms and Demonstration Centres.	Wheat 52.		Gram S. 4.		Lentil.		Mustards.		Linseed.	
		Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.
			Md. sr.		Md. sr.		Md. sr.		Md. sr.		Md. sr.
Bankura	2 Union Board Farms and 7 Demonstration Centres.	2·99	22 15	3·99	39 6	2·99	21 7	3·66	12 31	2 33	3 8
Midnapore ..	7 Union Board Farms and 16 Demonstration Centres.	5·15	24 20	15·41	53 34	..	..	19·1	58 24	2·48	9 10
Howrah	4 Union Board Farms and 10 Demonstration Centres.	·66	5 0	1·0	7 23	12·13	59 14	4·66	8 4	9·40	38 10
Hooghly ..	6 Union Board Farms and 14 Demonstration Centres.	3·0	49 20	10·24	193 12	1·5	5 34	1·33	3 0	·93	3 0
Burdwan	6 Union Board Farms and 15 Demonstration Centres.	11·65	51 0	10·24	48 27	6·6	26 33	Nil	..	Nil	..
Birbhum	5 Union Board Farms and 15 Demonstration Centres.	6·0	32 5	9·33	95 24	5·4	18 8	2·0	3 5	3·0	6 35
Murshidabad ..	5 Union Board Farms and 15 Demonstration Centres.	1·66	10 20	3·33	24 10	1·0	7 20	1·33	4 0	1·66	5 20
Nadia	6 Union Board Farms and 18 Demonstration Centres.	4·0	14 0	13·99	52 25	8·0	39 16	20·0	50 16	Nil	..
Jessore	7 Union Board Farms and 20 Demonstration Centres.	3·56	10 13	36·66	262·34	26·66	212 7	11·33	65 33	1·66	1 20
Khulna	5 Union Board Farms and 13 Demonstration Centres.	..	..	39·0	294 13	9·66	85 15	9·0	53 32	2·0	15 20
24-Parganas ..	7 Union Board Farms and 19 Demonstration Centres.	8·66	80 10	13·99	142 29	10·66	92 32	7·66	40 21	2·33	13 27

Name of districts.	Total number of Union Board Farms and Demonstration Centres.	Tobacco.		Peas.		Potato.		English vegetables.	
		Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.	Area in acres.	Outturn.
			Md. sr.		Md. sr.		Md. sr.		Rs. a. p.
Bankura	2 Union Board Farms and 7 Demonstration Centres.	6·15	31 8	..	..	..	..	1·48	81 0 0
Midnapore ..	7 Union Board Farms and 16 Demonstration Centres.	3·0	20 9	..	..	2·93	601 35	5·77	908 2 0
Howrah	4 Union Board Farms and 10 Demonstration Centres.	1·48 Not cured.	..	8·60	14 38	..	..	1·7	688 14 0
Hooghly	6 Union Board Farms and 14 Demonstration Centres.	·75 Not cured.	..	..	..	..	..	·82	58 4 0
Burdwan	6 Union Board Farms and 15 Demonstration Centres.	3·06	34 0	..	..	..	..	·8	976 10 0
Birbhum	5 Union Board Farms and 15 Demonstration Centres.	6·45	29 20	..	..	..	..	3·9	579 4 0
Murshidabad ..	5 Union Board Farms and 15 Demonstration Centres.	·82	5 15	..	..	..	..	1·66	42 12 0
Nadia	6 Union Board Farms and 18 Demonstration Centres.	8·0 Not cured	..	..	..	..	..	14·0	2,769 7 3
Jessore	7 Union Board Farms and 20 Demonstration Centres.	18·24	132 0	17·15	90 20	..	..	18·41	1,662 0 0
Khulna	5 Union Board Farms and 13 Demonstration Centres.	4·15	43 20	..	..	..	..	3	780 14 0
24-Parganas ..	7 Union Board Farms and 19 Demonstration Centres.	8·66	68 28	..	..	..	..	4·66	1,232 8 0

APPENDIX D.

Statement showing the number of Exhibitions held during 1940-41.

District.	Name of exhibition.	Date held.	Value of prizes awarded.	Departmental contribution given.
			Rs.	Rs.
Midnapore ..	Basudevpur ..	8-2-1941 to 14-2-1941	125	100
	Badalpur ..	18-3-1941 to 25-3-1941	125	Nil
Nadia ..	Ballavpur ..	....	Nil	..
	Jamsherpur ..	....	Nil	..
	Ranaghat ..	....	125	..
Hooghly ..	Arambagh ..	16-3-1941 ..	150	50
	Mosra ..	8-4-1941 ..	..	50
	Uttarpara ..	31-3-1941 ..	..	..
Howrah ..	Bagnan ..	2-3-1941 to 4-3-1941	50	25
	Rajgunj ..	16-3-1941 to 19-3-1941	127	55
Burdwan ..	Ushagram ..	17-12-1940 ..	75	20
	Asansole ..	1-3-1941 ..	100	30
Berhampore ..	Lalgola ..	14-2-1941 to 16-2-1941	125	50
24-Parganas ..	Dhankuria ..	....	..	..
	Behala ..	....	..	..
	Gangasagar ..	....	..	..
	Kowgachi ..	....	..	..
Jessore ..	Jessore town ..	9-2-1941 to 23-2-1941	250	100
	Lakshmipasha ..	16-3-1941 to 26-3-1941	125	50
Bankura ..	Gogra ..	3-2-1941 ..	100	25
	Sarenga ..	15-2-1941 ..	100	25
	Vishnupur ..	16-2-1941 ..	125	25
Birbhum ..	Sriniketan ..	5-2-1941 ..	100	40
	Raipur School ..	5-3-1941 ..	50	Nil
Khulna ..	Joar ..	4-2-1941 ..	125	50
	Kalkalia ..	15-3-1941 ..	Nil	Nil

APPENDIX E.

Statement showing the names and number of articles of prizes distributed to the Exhibitions held in this Circle during the year 1940-41.

1. Sobkam plough	25
2. Don	12
3. Kodali (Potato)	24
4. Kodali (Fork)	51
5. Spade	254
6. Can	85
7. Rake	34
8. Handhoe	14
9. Garden tools	20
10. Bucket	18
11. Syringe	18
12. Norcross cultivators	6
13. Diamond pork	3
14. Axe	6
15. Pruning knife	4
16. Hatchet	40
17. Cane Dhama	3
18. Hasua	2
19. Wooden phorras	2
20. Cash	Rs. 50.
21. Iron chantas	2
22. Service case	1
23. Red label manure (worth)	Rs. 29-15.
	Md. sr.
24. Bonemeal	3 20
25. Castor cake	2 20
26. Sulphate of ammonia	1 0
27. *Aman* paddy seeds	13 0
28. Jute seeds	2 0
29. Vegetable seeds	19 packets.
	Md. sr.
30. Joar and Dhaincha seeds	3 0
31. Tata Gainty	18 0

APPENDIX F.

Statement showing lectures given during the year 1940-41.

District.	Name of place.	Number of lantern lectures given and Cinema shows with lectures.	Number of ordinary lectures given.	Average number of people attended.	Remarks.
Midnapore	Ghatal	Nil	2	60	
	Ballichak ..	Nil	2	150	
Nadia ..	Ballavpur ..	1	..	1,200	
	Jamsherpur ..	1	1	700	
	Ranaghat ..	..	1	3,000	
	Chapra	..	1	300	Accompanied by gramophone records.
Hooghly	Jhangipara ..	..	1	50	
	Makalpur ..	..	1	150	
	Guptipara ..	..	1	200	
	Singur	..	1	40	
	Balarambati ..	..	1	30	
	Purushuttampur ..	..	1	35	
	Debanandapur ..	..	1	40	
	Iswaribagh ..	..	1	20	
	Tarakeswar ..	..	1	50	
	Dwarbashini ..	..	1	60	
	Arambagh ..	..	1	100	
	Tinua	..	1	50	
	Pandua ..	..	1	70	
Howrah ..	Domjur ..	..	2	100	
	Makardah ..	1	..	1,000	
	Uluberia ..	..	2	48	
	Andul	1	..	3,000	
	Kona	1	..	300	
	Chandbagh ..	1	..	2,000	
	Lillooah	..	1	150	
	Bainan	..	1	500	
	Rajganj ..	..	2	2,000	
	Amta	..	1	250	
	Bagnan ..	..	1	100	
Burdwan ..	Purbashthali ..	..	1	500	
	Viringhi ..	..	2	60	Trainers of Rural Reconstruction Camp.
	Athora ..	..	1	25	Ditto.
	Ushagram ..	..	1	25	Ditto.
	Gopalpur ..	..	1	30	Ditto.

District.	Name of place.	Number of lantern lectures given and Cinema shows with lectures.	Number of ordinary lectures given.	Average number of people attended.	Remarks.
Murshidabad ..	Lalabagh ..	..	2	80	Trainers of Rural Reconstruction Camp.
	Berhampore ..	..	2	50	Guru Training.
	Saktipore ..	..	1	500	
	Lalgola	..	1	500	
24-Parganas ..	Behala	..	3	1,500	
	Dhankuria ..	..	4	2,000	
	Sagarmela ..	..	3	3,000	
	Kowgachi ..	..	6	2,400	
	Rupmari ..	..	1	1,500	
	Dum Dum ..	..	1	500	
	Vishnupur ..	..	1	400	
Jessore ..	Bongaon ..	..	1	200	
	Narail ..	..	1	300	
	Juenidah ..	..	2	1,600	
	Mirzanagar ..	..	1	50	
	Jessore	..	2	1,800	
	Lakshmipasha ..	..	1	400	
Bankura	9 Thanas and 20 villages.	..	39	5,000	
Birbhum ..	Dwarka ..	..	1	2,000	
	Mahmudbazar ..	..	1	500	
	Ilambazar ..	..	3	200	
	Rupaspur ..	..	1	100	
	Dubrajpur ..	..	2	200	
	Sainthia ..	..	1	200	
	Sapur	..	1	3,000	
	Nalhati ..	..	1	25	
	Sankarpur ..	..	1	100	
	Shahpur ..	..	1	300	
	Rajnagar ..	..	1	200	
	Paruldanga ..	..	1	50	
	Godakuri ..	..	1	50	

District.	Name of place.	Number of lantern lectures given and Cinema shows with lectures.	Number of ordinary lectures given.	Average number of people attended.	Remarks.
Khulna ..	Patkelghata ..	..	4	200	
	Kalaroa ..	..	1	200	
	Raruli	..	2	100	
	Paigacha ..	..	1	100	
	Jatrapur ..	..	1	50	
	Debipur ..	..	1	50	
	Daulatpur ..	..	2	200	
	Mokahat ..	..	2	100	
	Sason	..	2	400	
	Joar	.. 1	4	400	
	Kalkulia ..	1	..	500	
	Bagerhat ..	..	3	200	
	Keshra	..	1	50	
	Naihati ..	..	2	50	
	Senhati	..	1	100	
	Tilok	..	1	50	
	Sengati	..	1	50	

APPENDIX G.

Statement showing quantities of artificial farmyard manure and silage produced at Government farms and in the districts.

	Artificial farmyard manure (including water-hyacinth compost).		Silage.	
	Md.	sr.	Md.	sr.
Government farms	7,257	0	1,000	0
Districts	24,920	0	7,570	0

APPENDIX H.

Statement showing the activities of Khasmahals, Court of Wards' Estates, District Boards, etc., during 1940-41.

Districts.	Name of agencies.	Distribution of seeds and manures.	Total amount spent for the scheme.	Number of Demonstrators entertained.
			Rs. a. p.	
Midnapore ..	3 Court of Wards' Estates—	Seeds and cuttings—		
	Ballishahi, Naren Pahari Basudevpur.	Paddy, sugarcane, groundnut, wheat, English vegetable, Napier grass, etc., worth Rs. 958 was supplied.	3,738 0 0 (inclusive of Agricultural Demonstrators' pay, etc.).	3 Demonstrators—One in each estate.
		Rs.		
		Poultry .. 130		
		Manures and compost-making 450		
		Implements .. 100		
	Collector's discretionary grant.	Persian wheel .. 300	1,150 0 0	
		Cotton gin .. 600		
		Seed *gola* .. 250		
Hooghly ..	2 Court of Wards' Estates—			
	B. L. Mukherjee and P. Mukherjee.	Seeds—Paddy, gram, mustard, lentil, wheat, and English vegetables, etc., were distributed.	908 2 3	1 Demonstrator.
	Khasmahal Farm at Guptipara.	Gram, wheat and English vegetable seeds, sugarcane cuttings and manures.	282 4 0	Ditto.
Howrah ..	District Agricultural Association.	Potatoes, tomatoes, jute, and deep-water paddy.	320 0 0	
	District Board ..	Paid to District Agricultural Association.	500 0 0	
	Court of Wards' Estate, Bhowanipur.	Paddy, groundnut, potatoes, sugarcane and tobacco.	Figures not available.	*N. B.—Vide* item under "24-Parganas".
Burdwan ..	Nil.			
Murshidabad	Nawab Bahadur of Murshidabad—3 Farms.	....	....	1 Demonstrator.
	District Agricultural Association.	Wheat and potatoes ..	207 11 0	
24-Parganas	Bhowanipur Wards' Estate.	Paddy, oil-seeds, fodder and winter crops worth. 1,454 8	2,000 0 0	1 Agricultural Demonstrator (working in the district of Howrah also).
	M. N. Roy Wards' Estate.	Paddy, oilseeds, etc. 523 0	1,413 0 0	1 Agricultural Demonstrator.
	Panihati Wards' Estate.	Seeds and manures. 394 0	850 0 0	Ditto.
	Monsadwip Khas Mahal.	Some crops as in the demonstration centres.	....	Ditto.

Districts.	Name of agencies.	Distribution of seeds and manures.	Total amount spent for the scheme.	Number of Demonstrators entertained.
			Rs. a. p.	
Jessore ..	Khas Mahal Farm	Sedds and manures ..	740 0 0	Nil. But the Departmental Agricultural Demonstrator posted at Sadar looks after this farm.
	Rural Reconstruction Society.	Sugarcane crushing mill	100 0 0	....
Bankura ..	Khas Mahal ..	Paddy ..	50 0 0	....
	Raha Wards' Estate	Paddy, groundnut, potato, tobacco, etc., and sugarcane and English vegetables.	1,660 0 0	1 Agricultural Demonstrator.
	District Board ..	....	100 0 0	....
	District Agricultural Association.	Potatoes, groundnut and English vegetables.	1,250 0 0	....
Birbhum	Nil.			
Khulna ..	Saidpur Wards' Estate.	Departmental seeds and manures.	100 0 0	1 Agricultural Demonstrator.

N.B.—(i) There were 370 co-operative irrigation societies in the district of Bankura of which 280 are functioning.

(ii) There were two Agricultural Associations—one at Khulna and the other at Sason, the latter obtained 380 tolas of Motihari tobacco seeds free from the Department and distributed the same amongst its members.

APPENDIX I.

Statement showing sale of seeds and manures and implements through the Government Seed Store during the year 1940-41.

Name of articles supplied.	Name of Seed Store.						
	Chinsurah.	Krishnagar.	Berhampore.	Burdwan.	Birbhum.	Bankura.	Midnapore.
	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Seeds.							
Aus paddy	3 35 8	26 2 0	..	..	..	17 18 0	..
Aman paddy	1,202 17 12	18 6 0	..	..	..	44 5 0	7 0 0
Linseed	..	..	0 0 8	..	..	..	..
Peas	..	..	..	..	..	0 3 0	..
Castor	..	..	..	..	..	0 2 12	..
Altissima	..	..	..	..	..	..	0 5 0
Sugarcane cuttings ..	18,000 Nos.	240 0 0	16 0 0	..	..	9,750 Nos.	..
Rahar	..	0 7 0	..	..	..	..	0 10 0
Napier grass cuttings ..	28 30 0	..	6 20 0	2 0 0	..	9,800 Nos.	..
Wheat	0 10 0	0 24 0	..	..	1 0 0	0 39 0	1 0 0
Gram	..	..	..	..	1 0 0	..	0 20 0
Maize	..	..	0 0 10	..	..	..	..
Lentil	..	2 23 0	..	..	..	0 8 4	..
Pineapple suckers ..	15 Nos.	..	..	..	..	..	..

Pineapple suckers ..	15 Nos.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Radish	..	..	..	..	0 0 2	..	..
Plantain suckers	..	..	10 Nos.	..	..	..	..
Cowpea	..	..	..	..	..	0 20 10	..
Paddy seedlings	3½ cottahs.	..	..	..	..	..	..
Jute	..	..	..	..	..	..	..
Saboi grass	..	..	..	5 0 0	..	..	..
Tobacco	1 tola.	..	22 tolas.	..	..	26½ tolas.	..
Mustard, Rai 5	..	..	0 22 0	..	..	..	..
Mustard, Tori 7	..	..	..	..	..	0 13 0	..
Groundnut	..	0 11 8	2 27 12	..	..	2 36 10	..
Dhaincha	..	1 0 0	..	2 0 0	..	..	..
Manures.							
Bonemeal	..	..	..	..	..	3 23 4	..
Castorcake	..	..	..	..	..	0 25 0	..
Nicifos	..	..	0 10 0	..	..	1 25 4	..
Amo. Phos.	..	0 2 8	..	..	..	..	..
Amm. Sulphate	..	..	..	1 12 0	..	..	..
Artificial farmyard manure ..	..	7 0 0	..	..	..	..	..
Implements.							
Handhoe	..	1 No.	..	..	..	..	..

N.B.—This statement includes all supplies for "Cash Sale" only. Supply for any other purpose has not been included.

APPENDIX J.

Statement showing produce and supply of seeds from Government farms.

Name of firms.	Name of seeds.	Quantity produced.	Quantity of seed supplied— Direct from farm stock.	Through attached seed store.	Total.
		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Berhampore Farm	*Aus* paddy ..	84 37 4	80 9 12	..	80 9 12
	Altissima ..	0 38 0	0 38 0	..	0 38 0
	Banana sucker ..	10 Nos.	10 Nos.	..	10 Nos.
	Cotton seeds ..	1 19 0	1 19 0	..	1 19 0
	Flax seeds ..	3 3 4	3 3 4	..	3 3 4
	Groundnut seeds ..	14 14 0	5 4 2	7 37 12	13 1 14
	Jute ..	0 28 0	0 28 0	..	0 28 0
	Gram ..	12 26 0	11 15 8	..	11 15 8
	Lentil ..	29 36 0	2 16 0	26 8 0	28 24 0
	Madagascar bean ..	1 1 0	..	..	..
	Sunnhemp ..	0 17 0	..	..	..
	Sugarcane cuttings	68,660 Nos.	8,000 Nos.	26,880 Nos.	34,880 Nos.
	Tobacco seeds ..	177 tolas	17½ tolas	151½ tolas	169 tolas
	Linseed seeds ..	11 30 0	1 31 0	9 39 0	11 30 0
Bankura Farm ..	*Aus* paddy ..	71 11 0	21 37 0	..	21 37 0
	Badkalamkati *aman*	42 13 8	21 10 0	..	21 10 0
	Chatna Rahar ..	3 34 0	0 24 0	2 25 0	3 9 0
	Cowpea ..	1 38 2	0 37 8	0 26 10	1 24 2
	Napier grass ..	42,500 Nos.	33,000 Nos.	9,500 Nos.	42,500 Nos.
	Groundnut ..	13 11 2	7 35 6	..	7 35 6
	Mustard, Rai 5 ..	0 5 8	..	..	..
	Mustard, Tori 7 ..	0 17 10	0 2 0	0 13 0	0 15 0
	Field pea ..	1 27 0	0 10 0	1 1 0	1 11 0
	Tobacco seeds ..	147 tolas	37½ tolas	29½ tolas	67 tolas
	Wheat seeds ..	3 23 8	0 12 0	0 39 0	1 11 0
	Castor seeds ..	1 2 0	0 1 0	0 2 12	3 12 0
	Gram seeds ..	0 10 0	0 10 0	..	0 10 0
	Lentil ..	2 4 8	0 29 4	0 8 4	0 37 8
	Dhaincha seeds ..	0 20 8	..	..	..
	Sugarcane ..	32,300 Nos.	22,600 Nos.	9,750 Nos.	32,300 Nos.

Name of firms.	Name of seeds.	Quantity produced.	Quantity of seed supplied—		
			Direct from farm stock.	Through attached seed store.	Total.
		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Krishnagar Farm	D × L *aus* ..	57 0 0	4 12 8	3 27 0	7 39 8
	Dharial *aus* ..	6 4 0	0 12 4	3 20 7	3 34 11
	Marichbati *aus* ..	8 0 0	0 23 0	2 12 12	2 35 12
	Rahar ..	59 32 0	1 0 2	1 10 0	2 10 12
	Jhingasail *aman* ..	7 11 0	0 15 0	0 12 8	0 27 8
	Badkalamkati (65)	11 39 0	0 25 0	0 9 0	0 34 0
	Napier grass ..	108 20 0	106 0 0	2 20 0	108 20 0
	Groundnut ..	6 24 0	2 0 8	0 35 15	2 36 7
	Potato ..	0 12 6	..	..	..
	Mustard, Tori 7 ..	2 0 0	0 3 10	..	0 3 10
	Gram (S. 4) ..	31 28 0	1 19 4	13 0 0	14 19 4
	Lentil 5 ..	2 13 0	0 20 0	1 33 0	2 13 0
	Linseed ..	2 19 8	0 10 0	..	0 10 0
	Cowpea ..	0 33 0	..	..	..
Suri Farm ..	*Aus* paddy ..	6 31 0	..	..	..
	Aman paddy ..	138 7 0	..	..	..
	Cotton ..	1 9 10	..	..	..
	Comilla Rahar ..	0 2 12	..	..	..
	Bankura Rahar ..	0 33 0	..	..	..
	Groundnut ..	3 9 0	..	..	..
	Tobacco ..	382 tolas	375 tolas	..	375 tolas.
Chinsurah Farm	*Aus* paddy ..	229 17 12	..	134 17 8	134 17 8
	Aman paddy ..	1,789 31 11	..	1,652 9 0	1,652 9 0
	Groundnut ..	0 17 0	..	..	..
	Kalai ..	0 34 0	..	..	..
	Peas ..	0 39 12	..	..	..
	Sunnhemp seeds ..	0 32 8	..	..	..
	Motihari tobacco ..	..	..	85 tolas	85 tolas.
	Wheat ..	..	..	7 19 8	7 19 8
	Victor Cowpea ..	..	..	0 1 0	0 1 0
	Lentil ..	..	..	5 4 0	5 4 0
	Jute seeds (C. G.)	1 1 0	..	1 11 0	1 11 0

APPENDIX K.

Statement showing the free supply of seeds and manures and implements in the districts during 1940-41.

Name of articles.	Bankura.	Midnapore.	Howrah.	Hooghly.	Burdwan.	Birbhum.	Murshida-bad.	Nadia.	Jessore.	Khulna.	24-Parganas.
	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.	Md. sr.
Seeds.											
Aman paddy ..	5 0	..	0 10	..	4 15	..	..	..	1 0	32 33	..
Motihari tobacco	..	..	..	..	..	..	..	..	..	350 tolas	..
Mustard ..	8 20	13 0	9 20	1 0	7 30	3 0	25 10	9 20	7 0	38 0	1 0
Groundnut ..	..	20 0	10 0	15 0	20 0	..	50 0	110 0	20 0	50 0	30 0
Joar ..	6 0	4 8	9 0	25 0	1 20	22 30	21 0	12 0	9 20	13 0	1 0
Maize ..	4 0	9 25	5 0	3 0	0 10	11 0	15 25	..	4 20	13 0	2 0
Cowpea ..	..	6 20	..	..	..	..	..	..	1 0	..	..
Manures.											
Ploughs ..	..	..	1 No.	..	..	..	..	..	..	..	..

APPENDIX L.

Statement showing supply of seeds, manures and implements in the districts of Western Circle.

(This includes all sorts of supplies made, viz., free supply to Union Board Farms and Demonstration Centres, free supply under Director of Agriculture's special order, cash sale, and Expert's scheme and supply made from khasmahal, District Board, etc., funds.)

Name of articles supplied.	Bankura.	Midnapore.	Howrah.	Hooghly.	Burdwan.	Birbhum.	Murshidabad.	Nadia.	Jessore.	Khulna.	24-Parganas.
	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Seeds.											
Aus paddy ..	61 5 0	2 0 0	0 26 0	4 15 0	..	49 30 0	146 9 12	77 31 15	32 6 0	22 20 0	88 0 0
Aman paddy ..	95 35 0	81 22 0	112 30 0	45 25 0	59 33 0	94 0 0	40 20 0	53 0 0	75 15 0	65 15 0	131 20 0
Jute ..	..	..	1 3 12	3 10 0	..	..	0 33 0	0 4 0	1 7 8	0 2 0	0 4 0
Sugarcane cuttings	805,000 Nos.	5,000 Nos.	4,000 Nos.	10,000 Nos.	..	..	34,880 Nos.	60,000 Nos.	..	..	140,000 Nos.
Napier cuttings ..	82,300 Nos.	12 0 0	16 0 0	22 0 0	18 0 0	4 20 0	46 20 0	116 2 0	32 0 0	96 0 0	128 0 0
Gram ..	5 12 0	0 20 0	0 21 0	13 31 0	8 35 0	1 0 0	17 5 8	22 11 4	..	22 37 0	11 22 0
Lentil ..	3 12 12	2 7 0	4 20 0	2 38 0	4 11 0	2 16 0	31 0 0	7 36 0	11 23 0	3 35 0	5 35 0
Mustard ..	11 20 0	13 0 0	10 2 0	2 26 0	11 26 0	3 10 0	26 16 0	12 23 10	12 8 0	38 38 0	1 0 0
Wheat ..	35 10 0	5 0 0	0 15 8	16 17 0	16 2 0	2 0 0	31 20 0	4 23 0	3 10 0	..	12 15 0
Groundnut ..	12 28 6	34 30 0	10 10 0	18 0 0	20 17 0	6 15 0	70 29 10	115 11 7	23 25 0	50 30 0	36 30 0
Linseed ..	..	2 0 0	2 38 0	0 12 0	..	16 0 0	13 26 0	..	0 24 0	1 20 0	28 0 0

APPENDIX L—*concluded.*

Name of articles supplied.	Bankura.	Midnapore.	Howrah.	Hooghly.	Burdwan.	Birbhum.	Murshidabad.	Nadia.	Jessore.	Khulna.	24-Parganas.
	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.
Tobacca ..	145 tolas	12½ tolas	13½ tolas	77 tolas	21 tolas	375 tolas	186½ tolas	21½ tolas	103½ tolas	399 tolas	75 tolas.
Mung ..	..	..	..	..	..	..	..	..	..	..	1 0 0
Khesari ..	..	..	..	..	..	..	..	..	..	..	6 0 0
Matikalai ..	..	..	..	3 20 0	..	..	..	..	..	..	..
Peas ..	..	..	0 28 0	7 24 0	..	..	..	..	10 37 0	..	5 16 0
English vegetables	Worth Rs. 300.	150 ozs.	29½ ozs.	48½ ozs.	92 ozs.	..	..	22lbs. 20 ozs.	Rs. 200.	Rs. 57-8.	Worth Rs. 409-11
Potato	177 0 0	55 20 0	23 29 0	..	2 0 0	..	..	..	8 0 0	..	48 0 0
Cowpea ..	2 26 0	6 20 0	..	..	1 20 0	..	..	..	..	..	3 32 0
Maize ..	4 0 0	39 25 0	5 0 0	..	0 12 8	12 20 0	16 10 10	..	2 32 0	16 30 0	7 12 0
Joar ..	10 7 0	4 8 0	13 30 0	..	3 30 0	29 0 0	30 0 0	21 20 0	6 35 0	13 0 0	8 2 0
Rahar ..	4 8 0	0 10 8	..	..	0 30 0	0 23 0	..	2 16 0	10 27 8	..	2 20 0
Dhaincha ..	..	..	..	..	30 22 8	..	..	4 33 12	..	..	17 0 0
Manures.											
Bonemeal ..	90 23 4	140 0 0	..	50 0 0	15 0 0	40 20 0	27 0 0	..	14 0 0	60 8 0	34 0 0
Castor cake ..	46 25 0	24 0 0	5 20 0	46 0 0	..	55 0 0	8 30 0	..	21 20 0	34 0 0	359 0 0
Mustard cake ..	..	..	..	..	..	17 20 0	..	..	..	..	..
Nicifos ..	10 39 4	10 0 0	24 28 0	14 22 0	..	..	16 10 0	96 0 0	6 16 0	..	54 cwt.
Amm. Sulphate ..	..	2 0 0	..	14 0 0	26 30 0	2 20 0	..	..	..	18 0 0	..
Amm. Phos. ..	7 35 0	..	..	..	..	..	15 0 0	..	..	..	..

Implements.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.
Plough ..	25	..	9	3	78	6	..	3	28	..	9
Handhoe ..	17	..	13	..	..	2	12	5	8	..	..
Rake ..	..	..	..	..	7	6	..	..	6	..	..
Watering can ..	4	7	14	..	..	5	..	..	30	..	2
Iron Don ..	12	8	7	..	..	..	..	5	..	..	..
Spade (fork) ..	55	..	17	..	..	42	..	..	24	..	25
Measuring tapes ..	..	..	4	3	5	..	..	..	..	5	8
Country balance ..	..	..	..	..	6	..	..	..	..	5	9
Petri dishes ..	..	..	18	..	..	..	..	..	..	..	..
Spraying syringe	..	..	..	..	..	4	..	..	..	..	..
Garden towles ..	..	..	..	..	..	12	..	..	..	..	..
Pick axe ..	..	..	..	..	..	36	..	..	6	..	..
Hatchet ..	..	..	..	..	..	..	..	..	40	..	..
Weeding fork ..	..	..	..	..	..	..	..	..	6	..	..

Annual Report of the Deputy Director of Agriculture, Northern Circle, for the year 1940-41.

1. **Circle.**—The Circle now consists of the whole Rajshahi Division comprising 8 districts. The district of Darjeeling which was formerly under the direct supervision of the Director of Agriculture, Bengal, was transferred to my control with effect from 1st August 1940.

I was in charge of the Circle throughout the year except for the period from 1st April to 21st May 1940, during which Khan Sahib Maulvi S. Abdullah, since transferred to Eastern Circle, held the post. Mr. A. M. Ahmad, Superintendent of Agriculture, Rajshahi, assisted the Deputy Director of Agriculture, Northern Circle, up to 29th August 1940 when he was transferred to Western Circle, and Mr. S. N. Chatterji acted from 30th October 1940 to the end of the year under report.

Tours.—The statement below shows the number of days, each officer was out on tour—

(1) Khan Sahib Maulvi S. Abdullah—7 days.

(2) Mr. F. Islam Waheed—135 days.

(3) Mr. A. M. Ahmad—50 days.

(4) Mr. S. N. Chatterji—48 days.

2. **Staff.**—The strength of the district staff was increased by one officer with effect from 2nd July 1940 when the Darjeeling district was placed under the control of the Deputy Director of Agriculture, Northern Circle, by the creation of a post in Subordinate Agricultural Service, Class I, and abolition of the post of the Superintendent of Agriculture, Darjeeling.

Below is given the list of Officers who held charge of the districts and also of the Government Farms, where there is one, with number of days spent by each on tour :—

District.	Officer-in-charge.	Period.	Number of days on tour.
Rajshahi Sadar ..	Babu P. K. Das ..	From 1st April to 19th December 1940.	47
Ditto ..	Babu H. C. Roy ..	From the 15th January 1941 to 31st March 1941 (Babu I. B. Sen, Overseer was in charge of the Farm from 20th December 1940 to 14th January 1941).	23
Naogaon and Natore.	Babu N. G. Majumder	Throughout the year ..	203
Rangpur ..	Babu D. N. Banerji ..	From 1st April to 12th June 1940.	27

District.	Officer-in-charge.	Period.	Number of days on tour.
Rangpur ..	Babu H. K. Basak ..	From 15th July 1940 to 24th October 1940.	25
Ditto ..	Babu Amitava Sen ..	From 25th October 1940 to 31st March 1941 (Maulvi Saadat Hossain, Overseer, was in charge of the farm from the 13th June to 14th July 1940).	98
Dinajpur ..	Babu K. K. Lahiri ..	Throughout the year ..	157
Pabna ..	Maulvi A. Jalil ..	Ditto ..	189
Bogra ..	Babu H. K. Basak ..	From 1st April to 7th July 1940.	29
Ditto ..	Babu J. M. Ganguly ..	From 8th July to the end of the year.	148
Jalpaiguri ..	Babu A. M. Das ..	Throughout the year ..	143
Malda ..	Babu S. R. Mukherji ..	Ditto ..	108
Darjeeling ..	Babu S. N. Chatterji ..	From 1st April to 1st July as Superintendent of Agriculture, Darjeeling, and from 2nd July to 28th October 1940 as District Agricultural Officer, Darjeeling.	26
Ditto ..	Babu H. K. Basak ..	From the 29th October to the end of the year.	19

Agricultural Officers-in-charge of Sugarcane Growers' Co-operative Societies.

Rajshahi Gopalpur.	Babu Nirmal Deb ..	From 1st April 1940 to 25th October 1940.	83
Ditto ..	Babu J. G. Bhowmick	From 26th October 1940 to 31st March 1941.	69
Setabganj, Dinajpur.	Babu A. C. Bose ..	Throughout the year ..	274

There were two Overseers—one being posted at the Rajshahi Farm and the other at the Rangpur Demonstration Farm. The strength of the permanent Agricultural Demonstrators was increased by 5, so there were 47 permanent and 2 temporary Agricultural Demonstrators at the end of the year. The staff under the Indian Central Jute Committee and the District Agricultural Officers in charge of Sugarcane Growers' Co-operative Societies remained the same. Khasmahals of Pabna and

Jalpaiguri districts entertained one and two Agricultural Demonstrators, respectively, during the year. Babu Gopal Chandra Ghosh, Agricultural Demonstrator at Birampur (Dinajpur), died of Meningitis on the 14th November 1940.

The staff were distributed as follows:—

District.	Departmental Agricultural Demonstrators.		Temporary Agricultural Demonstrators, Sugarcane Growers' Co-operative Societies.	Temporary staff under Indian Central Jute Committee.	
	Permanent.	Temporary.		Overseer.	Agricultural Demonstrators.
Rajshahi ..	5	..	3	..	1
Naogaon ..	4	1	..	1	1
Dinajpur ..	6	1	3 (Setabganj)	..	1
Malda ..	7	..	..	..	1
Bogra ..	5	..	..	1	2
Pabna ..	6	..	..	..	2
Jalpaiguri ..	6	..	..	1	4
Rangpur ..	7	..	..	1	4
Darjeeling ..	1	..	..	..	..
Total ..	47	2	6	4	16

There was one clerk in each of the Farms and a Store-keeper at Kalimpong.

3. **Season.**—The weather was not favourable and specially for *rabi* crops. The rainfall in all districts was much below normal. Crops badly suffered in all districts excepting Darjeeling and Jalpaiguri during *kharif*. The *kharif* sowing was generally delayed. *Aus* paddy suffered in all areas and available areas for *bhadoi* crops could not even be fully sown in Rajshahi, Dinajpur and Jalpaiguri districts. Transplantation of winter paddy was also delayed and interfered with and could not be done in considerable areas in different parts of Rangpur, Dinajpur, Rajshahi and Bogra. Outturn as also quality of sugarcane was affected in most places specially in Malda, Rajshahi and Rangpur. All *rabi* crops suffered due to long continued drought in all places resulting in low yields.

4. **District Farms.**—During the year under report Kalimpong Farm of the Darjeeling district came under control of the Deputy Director of Agriculture, Northern Circle, from August 1940. So there was one Government Farm in each of the 8 districts in this Circle excepting Bogra where there were two Farms one in the Khear area and another on the other side of the river in the Pali area. Detailed information on the work carried out in each farm may be seen in the report of the respective farms published separately.

A short note on the work of each farm is given below—

(1) *Rajshahi Farm.*—Out of the total area of 63·00 acres 48·03 were available for cultivation.

The season was unfavourable for all crops. The rainfall was about half of the normal and that also unevenly distributed, i.e., deficient in April, about normal in May, again very deficient in June to September. There was a little rain in October but practically none in November and December. A good shower in January did some good to standing *rabi* crops. But again there was no fall in February and March. Preparation of land for *bhadoi* crops, *aman* paddy and *rabi* crops could not be done properly. So all were sown more or less late. *Aman* had to be transplanted in adverse conditions. For lack of required moisture in the soil, germination of *rabi* crops, growth and yield of all crops were affected. It is only jute that fared well.

Insect pests also appeared on the scene due to adverse weather conditions.

Experimental cultivation.—The experiments consisted of (*a*) Economic Botanist's varietal tests with *aus*, early and late *aman* paddy and wheat including growing of pure lines; (*b*) Assistant Fibre Expert, Bengal's cultivation of flax; and (*c*) Agricultural Chemist, Bengal's varietal test on sugarcane.

Non-experimental cultivation.—*Aus* and *aman* paddys, maize, joar, gartala kalai for fodder, Napier grass, wheat, gram, tobacco, khesary, lentil and peas, oats, English vegetables and fruits were grown.

Dudsar *aman*, sugarcane, vegetables, gram, Napier and joar were grown on 7·85 acres on economic basis. Number of bullocks were reduced to 20 the rest being considered unnecessary and four of these have been replaced at the end of the year.

One thousand and ten maunds of artificial farmyard manure was produced on the farm and 1,380 maunds of joar and Napier was put into the pucca and the two pits silos.

The old silted up tank in B block was again re-excavated.

(2) *Kalimpong Farm.*—The total area of the Farm is 72·75 acres. 61·75 acres were available for cultivation, out of which 23·60 acres were leased out on *barga* system.

The rainfall was below normal by about 17 inches. The deficiency had no marked adverse effect on the growth of crops during *kharif* season. The scanty rainfall from October to the end of the year necessitated resorting to irrigation on a larger scale for paddy, potato, vegetables and flax. The sowing of maize for the 1941 crop was also delayed for insufficiency of rainfall. The elevation of the farm varies from the lower to the upper limit as follows:—

		Feet.
Lower boundary	...	3,200
Farm buildings	...	3,600
Upper boundary	...	3,900

Experimental cultivation.—The experiments consisted of (*a*) varietal test with maize, cultural test with maize terraced *versus* unterraced

land; (*b*) elevation experiment with paddy—paddy seed bed test; (*c*) varietal test with soyabean; and (*d*) Assistant Fibre Expert's experiment with flax.

Non-experimental cultivation.—Maize, marwa, mashyem, kalai dal, soyabean, sugarcane, potato, vegetables, Napier grass, etc., were grown.

Cultivation on Economic Basis.—Maize and soyabean were grown on 2·25 acres of land on economic basis.

Cultivation on barga system.—Maize, paddy and marwa were grown on *barga* system on 23·60 acres of land, the farm's share of produce being—

	Md. sr. ch.
Maize	138 34 8
Paddy	90 19 0
Marwa	130 29 0

About 7·50 acres of the Farm were under fruit garden. The cost incurred could not be realised from sale proceed this year due to low price of oranges—the main crop of the garden on account of bumper crop obtained this year in Sikkim and the Busties.

There were 15 bullocks in the farm.

Altogether 1,936 maunds of artificial farmyard manure were prepared during the year under report.

(3) *Pabna Farm.*—Out of the total area of 18·90 acres, 14·86 acres were available for cultivation.

The season was on the whole unfavourable. Insufficient and uneven rainfall seriously affected outturn of both *kharif* and *rabi* crops. *Aman* paddy could not be transplanted in most of the area.

Experimental cultivation.—The experiments consisted of (*a*) Economic Botanist's varietal test with *aus* paddy and wheat including growing of pure lines; (*b*) Agricultural Chemist's varietal test with sugarcane and cultivation of Berseem, (*c*) The Indian Central Jute Committee's varietal test with jute.

Non-experimental cultivation.—*Aus*, jute, sugarcane, deep-water *aman* paddy, rahar, joar (fodder), Napier grass, khesary (fodder), tori, linseed, peas and oats, lentil, gram, tobacco, pineapples and papaya were grown.

Economic cultivation.—An area of 7·66 acres was cultivated on economic basis as follows:—

	Acres.
Dharial *aus*	5·37
P × S(8) *aus*	1·47
Tilakkachari *aman*	·65
Jute C. G.	·17
	7·66

Cattle.—Out of 8 bullocks of the Farm, two were sold off by auction as being considered unnecessary.

Silage.—Fifty maunds of joar were made into silage in a kutcha pit.

Artificial farmyard manure.—About 1,085 maunds were prepared during the year under report.

(4) *Malda Farm.*—14·50 acres out of a total area of 18·645 acres were under cultivation—the rest being occupied by buildings, roads, etc.

Rainfall was much below normal and not evenly distributed. *Kharif* crops had to be sown late and for want of moisture in the soil growth and outturn of crops, both *kharif* and *rabi* were adversely affected.

Experimental cultivation.—The experiments consisted of (*a*) Economic Botanist's experiment with *aus* and deep-water *aman* paddy and including growing of pure lines; (*b*) varietal test on sugarcane.

Non-experimental cultivation.—*Aus* and *aman* paddy, joar and maize for fodder, groundnut, rahar, cotton, altissima, tobacco, tori, lentil, gram, wheat, mug, linseed, oats and peas were grown.

The outturn of cotton was nearly 12 maunds to the acre.

Economic cultivation.—Maize, tobacco and lentil were grown on economic basis.

Cattle.—One pair of bullocks was sold by auction as being considered unnecessary leaving 3 pairs, the condition of which was all along good.

One thousand five hundred and thirty maunds of artificial farmyard manure was prepared and utilised for manuring farm lands. 302 maunds and 30 seers of joar and maize were made into silage and fed to the farm cattle.

(5) *Maynaguri Farm.*—Out of a total area of 23·07 acres, 20·62 acres were available for cultivation of which ·12 acre remained fallow. 2·45 acres were occupied by buildings, roads and tanks, etc.

Though the rainfall was slightly below normal, there was practically no rain from October to March. As a result growth and yields of *aman* paddy, tobacco and other *rabi* crops were much affected.

Experimental cultivation.—The experiments consisted of (*a*) Economic Botanist's varietal test with *aus* and *aman* paddy, and (*b*) Agricultural Chemist's varietal test with sugarcane.

Non-experimental cultivation.—*Aus* and *aman* paddy, maize, joar, and oats and peas for fodder, peas for seed, dhaincha for seed, dhaincha and sunnhemp for green manure, rahar, tobacco, lentil, tori, Darjeeling potato and English vegetables were grown.

Dharial *aus* and Latisail and Dudsar *aman* paddy were grown on economic basis on 4·85 acres.

Cattle.—There were 8 bullocks in the farm of which one had to be replaced due to old age.

Three thousand and fifty-six maunds of artificial farmyard manure were prepared and 451 maunds of green fodder were made into silage.

(6) *Bogra Farm.*—Out of total areas of 22·90 and 6·14 acres, respectively, in the main and branch farms, 16·73 and 5·40 acres were available for cultivation, the rest being occupied by buildings, roads and tanks, etc.

The season on the whole was unfavourable both for *kharif* and *rabi* crops. The rainfall in the year was only a few inches more than half of normal. Insufficient rainfall affected the growth and yield of *aus* paddy and jute. *Aman* paddy could not be transplanted before August for want of sufficient rain. Again drought from October to March badly affected the growth and yield of *aman* paddy and *rabi* crops as well.

Experimental cultivation.—The experiment consisted of (*a*) Economic Botanist's varietal test with *aus* and *aman* paddy in the main farm, and (*b*) Agrcultural Chemist's varietal test with sugarcane in the branch farm.

Non-experimental cultivation.—Dharial *aus*, Bhasamanik *aman*, Napier grass, sunnhemp for green manure in the main and branch farms, maize, rahar, cotton, jute for seed, tori, groundnut, gram, lentil, wheat, peas in the branch farm and Indrasail, Latisail and Kumari *aus* were grown in the main Farm.

Aman paddy on 3·11 acres in the main farm and *aus* on ·66 acre in the branch farm were grown on economic basis.

Cattle.—Four pairs of bullocks kept on the farm during the year, maintained good health throughout.

Artificial farmyard manure.—Three hundred and thirty maunds in the main farm and 315 maunds in the branch farm were prepared.

(7) *Dinajpur Farm.*—An area of 17·603 acres was available for cultivation out of the total area of 24·213 acres—the rest being occupied by buildings, road and tanks, etc.

The season on the whole was not favourable. The rainfall was about two-thirds of normal. It was not favourable for *aus* paddy but not unfavourable for joar, maize, jute and altissima and was very favourable for cotton and deep-water *aman* paddy grown in the low-lying areas. Continued drought from November adversely affected the growth of almost all the *rabi* crops and the outturn of *gur* of sugarcane.

Experimental cultivation.—The experiments consisted of (*a*) Economic Botanist's varietal test with *aus* and *aman* paddy, (*b*) Agricultural Chemist's varietal test with sugarcane, moisture experiment and experiment of reclaiming barren lands, (*c*) Assistant Fibre Expert's flax experiments on low and high lands, and (*d*) Second Economic Botanist's rahar, groundnut and cotton experiment.

Non-experimental cultivation.—*Aus* and *aman* paddy, joar, maize (fodder), Napier and Guinea grass, jute for fibre and seed, altissima, dhaincha for seed and green manure, tori, lentil, tobacco and English vegetables, peas for seed, oats and peas, berseem and khesary were grown. The last four crops were raised for fodder.

Indrasail paddy on 2·15 acres were grown on economic basis.

Cattle.—There were 4 pairs of bullocks and one stud bull on the farm—one old bullock was replaced during the year. The bull served 76 cows during the year.

Silage.—Eighty-nine maunds 30 seers of joar were made into silage. About 864 maunds of artificial farmyard manure were produced.

(8) *Rangpur Farm*.—Out of a total area of 19·70 acres, 15·71 acres were under cultivation.

Rainfall was only half of normal. *Aus* paddy, and other *kharif* crops of the farm fared tolerably but due to scanty rainfall from July onwards, *aman* paddy could not be transplanted. Most of the lands had to be kept fallow. The *rabi* season was abnormally dry. The growth and outturn of all *rabi* crops were seriously affected. Crops like English vegetables could only be grown with much difficulty.

Experimental cultivation.—The experiments consisted of (*a*) varietal test with jute of the Director of Jute Research Laboratory, Dacca, (*b*) Economic Botanist's varietal test with *aus* paddy, (*c*) Agricultural Chemist's varietal test with sugarcane and experiment on berseem, (*d*) Second Economic Botanist's experiment with rahar, and (*e*) Assistant Fibre Expert's varietal test with flax. The Economic Botanist's varietal test with *aman* had to be abandoned for want of sufficient rainfall.

Non-experimental cultivation.—*Aus* and *aman* paddy, rahar, maize, joar, oats and peas, and khesary for fodder, Napier grass, mustard T. 7 and lentil (5) were grown.

Economic cultivation.—An area of 1·60 acre was put under Dharial *aus* and oats and peas.

Cattle.—The farm bull served 158 cows during the year. There were 4 pairs of bullock on the farm. A new pair was purchased to replace one old pair.

4,000 c. ft. of artificial farmyard manure and 200 c.ft. of water-hyacinth compost was prepared on the farm.

5. **Union Board Farms and Demonstration Centres.**—This was the 3rd year of the scheme. Of the 32 Union Board Farms stated as having been opened in last year's report, one had to be abolished for unavoidable reasons and another 20 new farms were opened. Of these 4 were opened under 4 newly appointed Agricultural Demonstrators and the other 16 were stated under charge of the Jute Committee Agricultural Demonstrators. So there were altogether 51 Union Board Farms and 155 Demonstration Centres in the rural areas in this Circle during the year under report. Each Agricultural Demonstrator was in charge of 1 Union Board Farm and 3 Demonstration Centres generally within his jurisdiction which comprised a radius of 5 miles from his headquarters.

The following cropping schemes were generally followed in the Union Board Farms and Demonstration Centres in this Circle with minor alterations in different localities according to the suitability of the soil and weather conditions:—

(*a*) *Union Board Farm*.—*Kharif*—Paddy—Area sufficient for 3 maunds of seed. Jute—1 bigha; fodder—Napier ½ bigha, joar or maize—½ bigha.

Rabi.—Gram, lentil, mustard, wheat and *rabi* fodder (oats and peas or Agartala kalai, etc.)—1 bigha each. Tobacca—10 cottahs.

Potato—6 cottahs for old and 1 bigha for new farm. English vegetables—10 cottahs. Special crops—Linseed and, groundnut in suitable areas. Seeds and oilcakes or chemical manures were supplied free and each owner of the new Union Board Farm was given a grant of Rs. 50 to build a paddy *gola* and Rs. 10 for a manure shed for conservation of cowdung on proper lines.

(*b*) *Demonstration Centres.*—*Kharif*—Paddy—30 bighas, fodder—Napier, joar or maize—3 bighas. Green manure—5 bighas (if possible more).

Rabi.—Gram, lentil, mustard and tobacco—2 bighas each. Wheat, Patna peas (for grain). Fodder—(Agartala kalai or oats and peas)—1 bigha each. Potato—6 cottahs. English vegetables—10 cottahs.

There was also provision for construction of one silo pit by each Agricultural Demonstrator and for making artificial farmyard manure and water-hyacinth compost. The Agricultural Demonstrators were also provided with improved ploughs and handhoes for practical demonstration in their jurisdiction.

The kharif programme could not practically be followed in 16 centres placed under the Jute Committee. Agricultural Demonstrators, as they went out for jute census work for a considerable period, i.e., from the last week of April to the 2nd week of July, 1940. A sum of Rs. 6,062-13-6 was spent in running the Union Board Farms and another sum of Rs. 9,610 was spent in the Demonstration Centres during the year under report. This does not include the value of seeds supplied free from Government farms.

The Union Board Farms were started as far as practicable in more or less compact blocks and owned by one man on a 3 years basis with an assurance from the owner of continuing it permanently. These served the purpose of small seed supply depôts in the areas in which they were situated as large quantities of improved and recommended seed grown and stored there were distributed to the local cultivator at reasonable prices.

The main idea about Demonstration Centres was that as many cultivators as possible should be brought in touch with the activities of the Department and these should expand sufficiently to cover with departmental crops the whole of the area of 5 miles radius from the headquarters of the Agricultural Demonstrator, within two or three years. During the year under report a very large number of cultivators were actually brought in touch with the departmental activities and they saw for themselves in their own localities the utilities of the improved and recommended seeds, manures and implements and the economic value of silage, artificial farmyard manure and water-hyacinth compost. Most of the cultivators preserved seed for next sowing. The Union Board Farm and Demonstration Centres thus served the purpose of valuable advertisement of our activities and actually helped in the spread of improved crops and improved methods of cultivation.

A list of the Union Board Farms and Demonstration Centres is given in Appendix I and the result of work in Appendix II.

6. **Premium system.**—This is the third year since this system of payment of subsidy for storage and sale of departmental seeds was

introduced. It was continued on condition (1) that the seeds must be of departmental origin, (2) must be reasonably pure and of good germination and (3) must be sold for seed purposes only. The scheme proved successful and it afforded an incentive to the farmers and jotedars to grow more departmental seeds and store them, as much as available, carefully to fulfil the conditions laid down under the system. The seeds stored under the system were examined time to time by the departmental staff and found in most cases to be fairly pure and of good germination. As such the system helped in the automatic expansion of departmental crops. The seeds being available locally, cultivators had nothing to spend for incidental charges for procuring these pure seeds of good germination capacity.

During the year under report a sum of Rs. 577-6-3 was paid as premium to the seed growers for sale of 1,418 maunds 30 seers *aus* paddy, 1,612 maunds 25 seers *aman* paddy and 50 maunds of *rabi* seeds.

7. **Private farms.**—These farms are doing very useful works in rural areas in automatic expansion of improved and recommended crops and improved methods of cultivation. They take seeds from Government farms and crops are grown under improved methods of cultivation. In these farms seeds preserved for next sowing and the surplus sold to the neighbouring cultivators. They thus serve as a very useful link between the Government farms and the rural population. As reported by the District Agricultural Officers as many as 61 private farms were in touch with the Department or grow crops recommended by the Department.

These are distributed as follows:—

Rajshahi	5
Rangpur	16
Dinajpur	7
Pabna	9
Bogra	8
Malda	7
Jalpaiguri	8
Darjeeling	1
Total ..	61

Short notes on some of the important private farms are given below:—

Rajshahi district.—(1) Char Srirampur Farm of Maulvi Aphel Mondal—Co. 213 sugarcane, wheat, gram (S. 4) and lentil were grown. (2) Madhupur Farm of Maulvi Lal Mohammad Mondal—Jute C. G. Marichbhutty, Paspai, Kasiapanja, and Jhingasail paddy, Co. 213 sugarcane and lentil were grown. (3) Nabaganga Farm of Babu Bholanath Paul—Marichbutty, Paspai, Indrasail and Dudsar paddy, gram (S. 4), lentil (5), wheat and tori (7) were grown. (4) Matihar Farm —in Rajshahi sadar—of Babu Birupakhya Guha—continued growing departmental crops. The owner has sold out his poultry in stock and is contemplating trying a new breed. (5) Mirtala Farm of Babu Jitendra Bhusan Bhattacharya near Malanchi Railway Station is an

ideal farm. Sugarcane, departmental *aus*, pulses, Motihari tobacco, English vegetables, fruit and root crops were grown. Cultivation is done on a modern system with recommended implements. A Government bull for public service is maintained on this farm. (6) and (7) Gopalpur Farm of North Bengal Sugar Mills and Gobardhan Farm of Kumar Sarat Kumar Roy of Dighapatia—supplied a few lakhs of sugarcane cuttings. In both farms breeding bulls are maintained for public purposes.

Dinajpur district.—(1) Kazipara Farm of Babu S. N. Sen Gupta. Its area is 1,200 bighas. Main crop is departmental varieties of sugarcane though fodder and green manure crops are also grown. A stud bull from the Live-Stock Expert, Bengal, is maintained in the farm. (2) Udaypur Farm of Babu Haridas Biswas and Babu D. N. Biswas near Raiganj Railway Station. Its area is 1,200 bighas. Dudsar, Bhasamanik *aman* paddy, Surjamukhi *aus*, cowpea for green manure, joar, maize and Napier grass were grown. A stud bull from the Live-Stock Expert is maintained in the farm. (3) Karnal Farm of Babu Mrinmoy Das Gupta. (4) Setabganj Farm of Setabganj Sugar Mills Co., Ltd.

Malda district.—(1) Lakhipur Farm of Maulvi Latif Hossain—*aus* paddy, tori (7) and wheat (P. 52) were grown. (2) Jatradanga Farm of Babu Iswarlal Ghosh—gram (S. 4) and tori—7 were grown. (3) Srishdanga Farm of Maulvi Musha Mistry. (4) Surulla Farm of Babu Dharani Dhar Maitra.

Jalpaiguri district.—(1) Khandeswari Sugar Factory in Hossainabad of the Hon'ble Nawab Musharruff Hossain, Khan Bahadur—90 acres were put under Co. 213 sugarcane and 908 maunds 5 seers *gur* received. (2) Shikarpur North Bengal Agricultural Farm of Baikunttapur Raj Estate—sugarcane, tori (7), rai (5) *aus* and *aman* paddy, English vegetables and Darjeeling potato were successfully grown. (3) Kharia Gosala Farm of the Jalpaiguri Goshala Committees of Marwaris. About 300 heads of cattle are maintained in the farm. Departmental *aus* and *aman* paddy, maize, Napier, joar, oats and peas, sugarcane, wheat P 52, tori 7, English vegetables and Darjeeling potato, etc., were grown with success. A silo with 175 maunds of joar and maize was made this year. (4) In the Farm of Makrapara Tea Estate, sugarcane and cotton were grown with success.

Bogra district.—(1) Gobindapur Farm of Maulvi Mahabatullah Talukder—Bhasamanik, Indrasail, Latisail *aman* and Dharial and Kumari *aus* paddy were grown. (2) (3) & (4). In the farm of Dr. S. N. Mondal of Joypurhat of Bogra, Maulvi Hatem Ali Mondal of Panchbibi and Khan Sahib Jasimuddin Ahmad of Kanupur departmental paddy varieties were grown.

Rangpur district.—(1) Ashu Babu's Farm is under Mithapukur thana—Co. 213 sugarcane, rahar, mustard, cowpea and Indrasail were grown. (2) Shampur Farm of Babu Madhab Chandra Bhowmick—Cultivation is done in up-to-date method. (3) Katabari Farm of Babu Sailesh Chandra Roy—cotton, mustard, rahar and other miscellaneous crops were grown. The outturn of tori No. 7 was quite good. (4) Maulvi Ashmutulla's Farm at Nagdaha—Departmental *aus* and *aman* paddies were grown. (5) Dasherhat Farm of Maulvi Pashiruddin—Indrasail and Dharial paddy, cowpea and mustard were grown. (6)

Ambika Babu's Farm in Pirgacha—Departmental *aus*, *aman* paddy and vegetables were grown. English vegetables were very successful.

Pabna district.—(1) Pakuria Seed Farm of Babu Nalini Ballav Mondal, P. O. Muladuli—Dharial *aus*, jute C. G., wheat and tori were grown. (2) Lakhikola Farm of Maulvi Tazimuddin, P. O. Dasuria, Vill. Muladuli-Indrasail, Tilakkachary, jute C. G., gram, lentil, tori, etc., were grown. (3) Dapunia Farm of Babu Promatha Nath Chobey, Tinghaci, Dapunia—Dharial *aus*, Tilakkachary Latisail, jute, gram, wheat, tori and lentil were grown. (4) Ataikula Farm of Maulvi Adali Khan, P. O. Ataikula—Dharial *aus*, Tilakkachary, Latisail, jute, gram, wheat, tori, lentil and Co. canes, tobacco, etc., were grown. (5) Malunch Farm of Babu Hari Das Sarkar, Malunchi—Dharia *aus*, Indrasail *aman*, jute, D. potato, lentil, gram, tori, wheat, tobacco, etc., were grown. (6) Ishurdi Farm of Babu Amrita Lal Chakravorty, Ishurdi—Dharial *aus*, tori, lentil, gram were grown. (7) Ishurdi Farm of Maulvi Panjab Ali Khan—Dharial *aus* was grown. (8) Ataikula Farm of Ager P. K.—Dharial *aus* was grown. (9) Atghari Farm of Babu Kalipada Das—Dharial *aus* paddy was grown.

8. **Seed farms.**—In all the private farms departmental seeds are grown and preserved for sale to neighbouring cultivators and as such these are also seed farms. Beside these there are big jotedars and cultivators who grow departmental crops and preserve seeds for sale. The names of some such important farms and seed growers with particulars of works done are given in Appendix III.

9. (*a*) There were seven seed stores in this Circle—one being attached to each of the Government Farms at Rajshahi, Rangpur, Dinajpur, Jalpaiguri, Malda, Pabna and Bogra. Farm produced seeds and cuttings were mainly supplied to the public through these seed stores.

(*b*) *Private Seed Stores.*—There is no private seed store in this Circle but Messrs. O. Sing Brothers, and R. Sing Brothers & Co., Jalpaiguri, supplied paddy and dhaincha seed, joar, maize, wheat, mustard, castor cake, chemical manures, etc., to Government farms, tea gardens and other interested parties. In the Rangpur district Babu Bhupendra Mohan Roy Chowdhury of Tepamadhupur, Babu Sashi Bhusan Ganguly of Gopalpur, Dr. Golam Ghaus of Burirhat and Babu Golakeswar Bhattacharya stored and sold *aus* and *aman* paddy seeds as in previous years. The last named gentleman sold other seeds also.

10. (*a*) **Special demonstration work.**—In addition to the general programme of demonstration work, demonstration of *gur*-making with McGlashan furnace was done on cultivators' fields in the districts. At Charghat centre of the Rajshahi Sadar subdivision, 3 McGlashan furnaces were arranged and boiling demonstration was successfully conducted and was much appreciated by the cultivators. In Naogaon subdivision *gur*-making was done with McGlashan furnace in the Private Farms of Mirtala and Dayarampur and in the house of Babu Ramjoy Das of Mahadebpur. This demonstration was also arranged in Pabna and Gopalpur Exhibition grounds.

(*b*) Under instruction of the Assistant Fibre Expert, Bengal, 100 bighas of land in the Gaibandha subdivision of Rangpur district were

put under flax. The crop was good and the total stock was purchased by the Department and stored at Gaibandha godown hired for this purpose where breaking and extraction of flax are being done. The work is being supervised by a special staff appointed for the purpose.

(*c*) Under instruction of the Second Economic Botanist, Bengal, 150 bighas of land was secured in the Barhazratpur Union in the Rangpur district and was put under mustard—tori No. 7. The work was supervised by a special Agricultural Demonstrator appointed for the purpose. Due to unfavourable weather condition only 227 maunds seeds were obtained. The whole quantity was purchased by the Department. Besides this quantity another 235 maunds were purchased from the Demonstration Centres and Union Board Farms of the Rangpur district in addition to another quantity of 210 maunds 24½ seers purchased from other districts of this Circle, where seeds were distributed for multiplication. These seeds were sent to Rangpur and the whole quantity has been stored in the farm godown. Besides 30 maunds 5 seers were purchased and stored at Malda. The total purchase therefore comes to 475 maunds 29½ seers.

(*d*) *In the Katabari Farm.*—At the private farm of Babu Sailesh Chandra Roy in the Sadar subdivision of Rangpur district 150 bighas were put under cotton cultivation. The work was managed under instruction of the Second Economic Botanist, Bengal, by a special Agricultural Demonstrator appointed by him for the purpose.

(*e*) Demonstrations through lectures with or without the help of magic lantern, cinema shows, gramophone records and with samples of seeds, manures, implements, charts and pictures were conducted in the Union Board Farms, Demonstration Centre, Exhibition grounds, hats and meetings of Rural Reconstruction work and shows of National Welfare Unit on the utility of improved seeds, use of manure, labour saving implements, cultivation of green manure and fodder crops, maintenance of breeding bull, silo making, conservation of cowdung on proper lines, manufacture of artificial farmyard manure. Meetings in connection with Jute Restriction and substitute crops for jute, etc., were also held.

A consolidated statement showing the places and numbers of lectures delivered and number of cultivators attending such lectures is given in Appendix IV.

11. **Exhibition and Shows in which the Department participated.**—According to the new scheme of participation in Agricultural Exhibitions, the Department participates generally in two important exhibitions in each district. Contribution is made to the Exhibition Committees for meeting incidental charges and prizes in kind only are awarded by the Department for the best exhibits of departmental crops, use of manures and improved implements, etc. The number of exhibitions was comparatively small this year due to bad economic condition. The Department participated in 10 exhibitions—two in each of the districts of Rajshahi, Dinajpur and Darjeeling, and one in each of the districts of Pabna, Bogra, Rangpur and Jalpaiguri. No prize was awarded by this Department in Darjeeling Flower Show but a contribution was made. The officers of the Department attended the shows with departmental exhibits of seeds, manures, implements, and fibres. Models and charts were also displayed. Lectures were delivered on

different topics concerning improvement of Agriculture including restriction of jute and substitute crops. Large number of leaflets and bulletins were distributed free and inumerable queries were attended to. It was evinced from the exhibits brought in, that cultivators paid greater attention to the production of better crops, manufacture of better fibre and *gur*, keeping poultry and cattle in better condition. Sugar-cane, wheat, tobacco, different kinds of paddies, barley, gram, lentil, ori, potato, English vegetables, jute fibre, *gur*, poultry, eggs, etc., were of high standard.

The system of awarding prizes in kind, *i.e.*, improved seeds, manures, implements and *gur*-making accessories, etc., proved to be of encouragement to cultivators.

A short note on different exhibitions is given below. The detailed information regarding places and dates of exhibition, number of people attending, number of cultivators receiving prizes, kind of prizes awarded and value of prizes are given in tabular form in Appendix V.

At Pabna the exhibition was arranged by the Collector and opened by the District Judge. The Agricultural Stall was fully represented by the exhibits of all sections of the Department. The Hon'ble the Chief Minister and the Commissioner of the Division visited the exhibition. Besides the cultivators of the Union Board Farm and Demonstration Centres of the district, those of the Union Board Farms and Demonstration Centres of the Domar Centre of the Rangpur district and cultivators and jotedars and farmers of other parts of Pabna district brought in their exhibits—Poultry, cattle, English vegetables, potato, tobacco, wheat, gram, paddy, etc. Practical demonstration on Napier cultivation, silo-making preparation of artificial farmyard manure and water-hyacinth compost, *gur*-making with McGlashan furnace, irrigation with Persian wheel and ploughing competitions were arranged. Ploughing exhibitions evinced their interest. Collection of tobacco and potato exhibits were of very high order and pointed to the fact that import from outside, of these two commodities could easily be stopped. The exhibition was a great success.

In the Rajshahi district Pakri exhibition was opened by the Collector on 11th January 1941 and lasted for three days. The Nator exhibition lasted for 4 days from 15th March 1941. In both the exhibitions departmental exhibits were displayed besides the exhibits brought in by the owners of the Union Board Farm and Demonstration Centres and other cultivators.

The Jalpesh Exhibition in Jalpaiguri district was opened by the Chairman, District Board, on 24th February 1941. The exhibition was very successful and attended by thousands of interested people. A large number of cultivators came with departmental crops, fibres, etc., of their own produce and poultry and cattle owned by them. The Deputy Commissioner, Jalpaiguri, President of the Exhibition, awarded prizes to the owner of best exhibits.

The Daserhut Exhibition in Rangpur district, Bijanbari Exhibition in Darjeeling district and the Durgahata Exhibition in Bogra district were attended by the District Agricultural Officers and the Agricultural Demonstrators of the districts with departmental exhibits.

In the Dinajpur district, Haripur Exhibition organised by the Haripur Court of Wards' Estate and Setabganj Exhibition organised by the Setabganj Sugar Mills Co., were attended by a very large number of cultivators with very good exhibits of their own produce. Departmental exhibits were also displayed in both the exhibitions. In Setabganj Exhibition practical demonstration on all about sugarcane cultivation on improved methods was arranged by the Setabganj Sugar Mills Co. The Setabganj Sugar Mills Co., also awarded prizes to the best growers of sugarcane.

The North Bengal Sugar Mills, Gopalpur, also arranged an exhibition at Gopalpur. The District Agricultural Officer, Sugarcane Growers' Co-operative Societies, Rajshahi, attended the exhibition with departmental exhibits. The Industries, Public Information, Public Health, Live-Stock and Veterinary Departments also participated and provided a large number of instructive exhibits, lantern slides and cinema films which were highly appreciated by the peasantry. The Mills authorities arranged practical demonstration in a part of the exhibition ground in which cultural methods were demonstrated with improved implements about land preparation, plantation, irrigation and manuring and displayed exhibits on the process of sugar manufacture and sugar analysis. Specimens of successful and promising cane varieties were shown. Sugarcane pests and diseases with remedial measures to be adopted were displayed in show cases.

Competition and prizes were arranged for better quality and yield of sugarcane and healthy live-stock. The cultivators were addressed by the Propaganda Officer of the Department, and the evening shows included lantern lectures and educative films on Agriculture. The District Magistrate gave out the prizes to the cultivators before a huge gathering in which prominent zamindars and gentlemen of the district were also present. The prizes consisted of improved bullock carts, improved type ploughs, cultivators, cart wheels, manures and various other implements and articles. In short the exhibition was a grand success. The Propaganda Officer of the Department addressed gatherings in almost all important exhibitions, besides the above showed the film "Bhuler Phasal" on improvement of Agriculture.

12. **Supply of seed, manures and implements.**—A consolidated statement showing the variety and quantity of seeds, manures and number of implements supplied for sale, or free for demonstration, etc., is given in Appendix VI.

13. The Agricultural Schemes worked out by the (*i*) Khasmahal, (*ii*) Court of Wards' Estates, (*iii*) District Boards and (*iv*) Agricultural Associations:—

(*i*) *Khasmahal.*—Short notes on activities of the Khasmahal are given below. The detailed statement will be found in Appendix VII.

The small Khasmahal Farm at Khanjanpur was under the supervision of the Departmental Agricultural Demonstrator posted at that centre. Departmental crops—*aus* and *aman* paddies, Jute, sugarcane and gram were grown on *barga* system. The total expenditure on this account of the farm was Rs. 50.

Jalpaiguri district.—Two Agricultural Demonstrators maintained by the Khasmahal were posted at Falakata and Alipur Duars and they

were in charge of 5 Khasmahal farms each throughout the year. The following cropping scheme was followed in each of the farms:—Kharif—*aus* paddy 3 bighas, *aman* paddy 16 bighas, jute, Napier grass and maize fodder 1 bigha each. Rabi—mustard 2 bighas, oats and peas, potato, Matihari tobacco and wheat 1 bigha each. English vegetables 10 cottahs. Besides these artificial farmyard manure heaps, silage and shed over manure pits were made in each farm. The total grant for the purpose was Rs. 1,800 only.

Malda district.—The small farm of Panchanandapur had to be closed as post of the Khasmahal Agricultural Demonstrator was abolished at the beginning of the year. This Khasmahal Department, however, sanctioned Rs. 250 for distribution of 60 maunds *aus* paddy seeds among the tenants.

Pabna district.—During the year a sum of Rs. 1,000 was sanctioned for the improvement of Agriculture in the Khasmahal estates. One Agricultural Demonstrator was appointed for the period from 7th October 1940 to 31st March 1941 and posted at Mirkutia. Two breeding bulls were purchased at Rs. 200 and seeds, manures and implements worth Rs. 393-12 were supplied to the tenants.

Darjeeling district.—The agricultural improvement work in the Khasmahals which is the most important work in the district, was started first in the year 1920-21. Since then two Agricultural Sub-Overseers have been maintained by the Khasmahal under year to year sanction, for demonstration and propaganda work. Seeds, cuttings, fruit trees, etc., are purchased from the Khasmahal grant from the Government Farm at Kalimpong and are distributed free amongst the Khasmahal tenants through the Agricultural Sub-Overseers. The work which is mainly concentrated in the Khasmahal blocks of Pedong, Gitbyoug, Mimbong and Yokprimtam in the Kalimpong subdivision is supervised by the District Agricultural Officer, Darjeeling (prior to 2nd July 1940 it was the Superintendent of Agriculture, Darjeeling). Besides introduction of wheat, maize, mustard, Napier grass, sugarcane, and fruit trees during the year under report, demonstration of *gur*-making with improved implements and making of ideal manure pits for proper conservation of cowdung preparation of artifiicial farmyard manure were arranged in many places. A sum of Rs. 1,841-7 was spent for pay and travelling allowance of officers and Rs. 349-14 was spent for purchase of seeds and cuttings, etc., during the year.

(*ii*) *Court of Wards' Estates.*—In the Dinajpur district the Deb Burman Court of Wards' Estate distributed 250 maunds of Indrasail, Bhashamanik and Dudsar paddies and the Bahin Court of Wards' Estate distributed 32 maunds. Indrasail and Dudsar paddies amongst the tenants for popularisation of departmental seeds. The Haripur Wards' Estate took interest in organizing an Agricultural Exhibition.

In Rangpur district.—The Tajhat Wards' Estate, Lahiri Wards' Estate, Kakina Raj Wards' Estate and Padya Wards' Estates started one farm each at Balarhat, Payarband, Gopalrai and Chandanpat, respectively. In these farms, gram, lentil, wheat, mustard, potato and English vegetables were grown under supervision of the Departmental Agricultural Demonstrators at Mithapukur, Lalmanirhat and Sadar.

(*iii*) No work was done by any District Board on agricultural improvement during the year.

(*iv*) The Rangpur Agricultural Association did not do any work during the year.

(*v*) The Co-operative Agricultural Association at Naogaon (Rajshahi), maintained a small farm of 8 acres for demonstration and production and supply of improved seeds and cuttings to the members of the association. This farm has since been abolished.

14. **Napier grass, artificial farmyard manure,—water-hyacinth composts and silo.**—As usual, Napier grass was grown and artificial farmyard manure was prepared in each farm and silage made in all farms excepting Bogra and Darjeeling.

Demonstration on making of silage, artificial farmyard manure and water-hyacinth compost, were conducted extensively in the districts.

A statement regarding growing of Napier grass, making of silage, artificial manures and hyacinth compost is given in Appendix VIII.

15. **Sugar Factory.**—A list of Sugar Factories is given in Appendix IX.

16. **Agricultural education.**—The following Schools had Agricultural Classes attached to them during the year under report:—

(1) Basanta Kumar Agricultural Institute, Rajshahi.
(2) Yusufpur Board M. E. School, Rajshahi.
(3) Kharba M. E. School, Malda.
(4) Tetulia M. E. School, Jalpaiguri.
(5) Falakata M. E. School, Jalpaiguri.
(6) Boda H. E. School, Jalpaiguri.
(7) Dalgram M. E. School, Rangpur.
(8) Ullapara H. E. School, Pabna.

17. **Work in connection with Jute Restriction.**—According to the Jute Regulation Act passed by the Government, the area under jute in 1941 was to be restricted to one-third of the total area under jute in 1940. According to the Departmental Final Forecast of 1940, area under jute in the Northern Circle was estimated to be 1,125,100 acres. So an area of 375,100 acres was to be fixed up for jute in 1941 and the remaining area of 750,000 acres were to be released from jute for growing, alternative crops. It was decided that in Jute-growing districts of Rangpur, Dinajpur, Pabna, Malda and Rajshahi in which a shortage of seed was apprehended, *aus* and *aman* paddy seeds should be supplied to the cultivators at cost price as substitute crops. It was decided to distribute paddy seed to cover about 10 per cent. of the released area from jute and for this purpose *aus* and *aman* paddy seeds available for purchase were fixed up with the growers giving advances where necessary. A grant of Rs. 30,000 was received during the year and with this 20,282 maunds 36 seers of *aus* and 7,500 maunds of *aman* paddy seeds were fixed up and 5,575 maunds 26 seers of *aus* and 539 maunds of *aman* paddy seeds, respectively, were actually taken delivery of. Out of this 3,600 maunds of paddy were sold to the cultivators at Rs. 3-12 per maund in Rangpur district and a sum of Rs. 5,859-14-3 was credited into treasury during the year. All the

Departmental Agricultural Demonstrators and Agricultural Demonstrators under Indian Central Jute Committee had to be engaged for the purpose for some time. The District Agricultural Officers and these Agricultural Demonstrators delivered lectures in different rural areas advising the growers to restrict the sowing of jute according to the quota fixed by the Government, to grow substitute crops in the released areas and to buy paddy seeds arranged by the Government in this connection. Lectures were also given with the aid of gramophone records and magic lantern slides supplied by the Special Officer for Jute Restriction and the contents of records and slides were explained to the growers.

18. **Work of the staff for the jute areas under the Indian Central Jute Committee.**—As usual the staff was engaged this year also from the 26th April to 12th July 1940 in Jute Census work. During the remaining period, the Overseers conducted the work of the Jute Committee. Their main duties were—

(1) Thorough survey of jute markets and jute areas.

(2) Ascertaining annual turnover of jute.

(3) Collection of market details regarding stock, price, weights and measures, consumption, export and imports.

(4) Finding out costs incurred by local system for cultivation, vetting, etc.

(5) Finding out local system of sale.

(6) Finding out allowances paid from cultivators to balers.

(7) Collection of information regarding area, population, etc., as required by the Director of Agriculture, Bengal.

They also helped the Department in Jute Forecast works and in recording percentage of areas under Olitorius and Capsularis varieties and in propaganda work of explaining, in course of their work, to the cultivators the importance of departmental seed and growing of substitute crops, making artificial farmyard manure and water-hyacinth compost. They also sold recommended jute seeds to the cultivators.

The services of the Agricultural Demonstrators under Indian Central Jute Committee were, however, utilised in general demonstration and propaganda work of the Department, just as Departmental Agricultural Demonstrators are engaged in. Each of them was put in charge of one Union Board Farm and 3 Demonstration Centres. Only the Agricultural Demonstrator, Bera (in Pabna), had to report weekly market price in addition from September 1940 till the season was over. With a few exceptions *rabi* cropping was only possible for these Demonstrators.

19. **Organisation of Co-operative Agricultural and Irrigation Societies.**—The Lakhipur Irrigation Scheme in the Estate of Khan Bahadur Abdul Hyat Khan Chowdhury and the irrigation plant of Maulvi Md. Musa at Sirisdanga in Malda district continued work during the year and good crops were obtained. The Jatradanga Irrigation Scheme in the Farm of Babu Iswar Lal Ghosh drawn up by the Agricultural Engineer, Bengal, has been completed and the plant was in use for irrigating "Boro" paddy with great success. *Rabi* crops like gram and wheat would be taken up this year.

20. **Organisation of Sugarcane Growers' Co-operative Societies.**—During the latter part of the year 1938-39 two Sugarcane Growers' Co-operative Societies' Unions, Ltd., were started out of the grant of the Government of India from the Sugar Excise duty, in two important mill centres, one at Setabganj in Dinajpur and the other at Gopalpur in Rajshahi with a view to improve the quality and quantity of cane and to introduce and encourage joint marketing of cane crop to the mills in the best interest of the producers. Both Agricultural and Co-operative Staffs were appointed. The Agricultural Staff looked to the introduction of better varieties, the improvement of cultural practices, and manuring, etc., and the Co-operative Department arranged sale of the cane.

Gopalpur Centre.—Till the end of the previous year 66 societies were organised. Of these, however, 57 societies were actually functioning during the year with 1,875 members on the roll and 4,959 bighas under sugarcane. One hundred and ninety maunds of castor cake meal and 190 maunds of ammonium sulphate purchased out of previous year's grant were applied during the year in both the trench planted and ratoon demonstration plots at the rate of 1 maund each per bigha to cover 190 bighas of demonstration area. Besides 15 maunds 37 seers of Nicifos 11, unused balance of last year, were also applied at the rate of one maund per bigha in another 15 bighas 18½ cottahs of land. The total areas under demonstration were 205 bighas 18½ cottahs. Demonstration with improved ploughs were also conducted in societies with 60 improved ploughs supplied last year. The demonstration was successful and remarkable results obtained. During the year demonstration in trench planting in 164 bighas 7 cottahs and improved ratoon demonstration in 85 bighas 13 cottahs have been arranged. Altogether 250 maunds of each of Red Label Fertilizer Mixture and castor cake meal and 20 maunds of bonemeal were obtained from this year's grant for application on demonstration plots arranged this year.

In Setabganj Centre 84 societies worked with 1,653 members on the roll during the year under report out of 88 societies registered: 155 maunds 38 seers of castor cake, 16 maunds 9 seers of Nicifos, 65 maunds 12 seers Ammophos and 16 maunds 20 seers of Red Label Mixture were distributed for demonstration purpose. In previous year, 70 improved ploughs were distributed among the members of the societies. During the year 50 Sobkam ploughs and 8 Amir ploughs were distributed for demonstration. Many cultivators have now realised the usefulness of these ploughs and during the year 4 Amir ploughs and 6 Sobkam ploughs were purchased by the members of the societies themselves. Trench planting was demonstrated successfully specially Manmathapur and Pirganj Centres where improved method of cultivation is rapidly increasing. Manufacture of artificial farmyard manure and conservation of cowdung have also been demonstrated among the growers and they are adopting the same realising their economic value.

The sugarcane growers, though inert and very conservative, have by this time been, it appears, convinced of the utility of the use of improved cuttings and implements and use of manure. It is expected with continued efforts it will be possible to popularise improved cultural practices among the growers.

Due to bad weather conditions and insect attacks the quality of cane was affected both in Gopalpur and Setabganj Centres. Red Rot was also noticed in some places in Setabganj area.

The Union in Gopalpur Centre contracted with Gopalpur Mills, Ltd., for supply of 2 lakhs maunds of cane from the produce of the season but up to the end of the year the actual supply amounted to about 170,000 maunds. The supply is still continuing and it is expected that the Union may fulfil the contract this time. The cane growers did not get a fair price for their produce this year. The rates were annas 5 per maund for gate cane and annas 4 per maund for delivery at rail head.

In Setabganj Centre the Union expected an outturn of 4½ lakhs maunds of sugarcane from the plots of the societies. Up to the end of the year 160,000 maunds were sold and 60,000 maunds were crushed for *gur* and about 40,000 maunds made into cuttings and an approximate quantity of 190,000 maunds of sugarcane remained in the field to be disposed of. The Mills authorities there did not enter into any agreement.

Both the Setabganj Sugar Mills, Ltd., and Gopalpur Sugar Mills, Ltd., arranged exhibitions at Setabganj and Gopalpur, respectively. The main object was to encourage cultivators to adopt improved methods of cultivation. The details of the exhibitions and prizes awarded have been mentioned at the proper place.

21. **Acknowledgment.**—Many thanks are due to all the officials and non-officials who extended their co-operation, in the discharge of my duties and thereby helped the Department in the way of expansion of its activities. Special mention may be made of the following officials and non-officials who rendered great help in popularising the work of the Department among the cultivators.

Officials.—Major I. Stewart, Deputy Commissioner, Jalpaiguri; Mr. F. A. Karim, Collector, Pabna; Mr. A. Ahmad, Collector, Rajshahi; Mr. S. B. Bapat, Collector, Rangpur; Khan Sahib M. Ahmad, Subdivisional Officer, Kurigram; Mr. J. M. G. Bell, Subdivisional Officer, Kalimpong.

Non-officials.—Rai Sahib Manmathanath Bhattacharya, President, Barahazratpur Union Board; Maulvi Khondaker Abdul Karim, President, Annadanagar Union Board; Maulvi Latif Hossain, President, Amriti Union Board; and Maulvi Saad Manir Ahmed Choudhury of Shyampur in Malda.

The District Agricultural Staff who had to work very hard during the year specially in connection with arrangement for supply of paddy seeds for jute released land, gave me their ungrudging support and I take this opportunity of acknowledging their good services.

My office staff also rendered me full assistance.

F. ISLAM WAHEED,

Deputy Director of Agriculture,

Northern Circle.

APPENDIX I.

List of Demonstration Centres and Union Board Farms in the Northern Circle, Bengal, 1940-41.

District.		Agricultural Demonstrator's headquarters.	Demonstration Centres.	Union Board Farms.
Rajshahi	..	1. Sadar	1. Shyampur ..	1. Sonaikandi.
Demonstration Centres ..	12		2. Kasiadanga.	
Union Boards ..	4		3. Paba.	
		2. Baneswar ..	4. Digalkandi ..	2. Namajgram.
			5. Hat Shibpur.	
			6. Haldigachi.	
		3. Godagari ..	7. Garpara ..	3. Mahisalbari.
			8. Godagari.	
			9. Ujanpara.	
		4. Charghat (Jute A. D.)	10. Jhikra ..	4. Miapur.
			11. Anupampur.	
			12. Moktarpur.	
Naogaon	..	1. Sadar	1. Boalia ..	1. Par Naogaon.
Demonstration Centres	14		2. Ullaspur.	
Union Boards	4	2. Hapania ..	3. Mohanpur.	
			4. Hapania-Akdalia.	
			5. Mosherpur.	
		3. Mahadebpur ..	6. Akhra ..	2. Fazilpur.
			7. Dohail.	
			8. Enayetpur.	
		4. Nator	9. Nator-Akdalia ..	3. Hogalbari.
			10. Bargacha.	
			11. Harishpur.	
		5. Naogaon Sadar (Jute A. D.)	12. Rezakpur ..	4. Araji-Naogaon.
			13. Chakprasad Araji.	
			14. Sherpur-Chakdaulat.	
Pabna	..	1. Ishurdi ..	1. Ishurdi ..	1. Patilakhali.
Demonstration Centres ..	18		2. Charmirkamari.	
			3. Ramchandrapur.	
Union Boards ..	6	2. Ataikula ..	4. Raghunathpur. ..	2. Ataikula-Sharadingi.
			5. Ataikula.	
			6. Shibpur.	
		3. Serajganj ..	7. Khaga ..	3. Teghari.
			8. Serajganj.	
			9. Kalyalgati.	

District.	Agricultural Demonstrator's headquarters.	Demonstration Centres.	Union Board Farms.
	4. Ullapara ..	10. Kawak ..	4. Bhatta Kawak.
		11. Enayetpur.	
		12. Srikhola.	
	5. Sadar (Jute A. D.)	13. Satina ..	5. Dupkhola.
		14. Nurpur.	
		15. Ramanandapur.	
	6. Bera (Jute A. D.) ..	16. Hatigarah ..	6. Karanja.
		17. Jordah.	
		18. Banagram.	
Bogra .. Demonstration Centres .. 15 Union Boards 6	1. Mokantala ..	1. Mokantala ..	1. Amjani.
		2. Deoli.	
		3. Kagail.	
	2. Dubchanchia ..	4. Dubchanchia ..	2. Gobindapur.
		5. Bikradhar.	
		6. Kalai.	
	3. Khanjanpur ..	7. Tejpur ..	3. Bogri.
		8. Parbatipur.	
		9. Dadra.	
	4. Sherpur (Jute A. D.)	10. Sherpur ..	4. Mahipur.
		11. Gopalpur.	
		12. Mirjapur.	
	5. Sonatola (Jute Agricultural Demonstrator).	13. Kabilpur ..	5. Kabilpur.
		14. Aguniatair.	
		15. Kanupur.	
Rangpur .. Demonstration Centres .. 33 Union Boards 11	1. Sadar	1. Chilmohon ..	1. Chiklibhata.
		2. Burirhat.	
		3. Damodarpur.	
	2. Mithapukur ..	4. Satibari ..	2. Barahazratpur.
		5. Ranipukur.	
		6. Nasirabad.	
	3. Annadanagar ..	7. Pirgacha ..	3. Annadanagar.
		8. Chalnianabu	
		9. Nabupathanpara.	
	4. Kurigram ..	10. Kurigram ..	4. Kurigram.
		11. Belgacha.	
		12. Mogalbacha.	
	5. Lalmanirhat ..	13. Bhatibari ..	5. Saptana.
		14. Khorda Saptana.	
		15. Khutamara.	
	6. Gaibandha ..	16. Udukhali ..	6. Padamshahar.
		17. Ballamjhar.	
		18. Thansingpur. ..	
	7. Nilphamari ..	19. Angarpara ..	7. Kukhapara.

District.	Agricultural Demonstrator's headquarters.	Demonstration Centres.	Union Board Farms.
		20. Kanailkhata.	
		21. Ramnagar.	
	8. Domar (Jute Agricultural Demonstrator).	22. Barakuti ..	8. Baragari.
		23. Bararouta.	
		24. Dubachuri.	
	9. Saidpur (Jute Agricultural Demonstrator).	25. Niamatpur ..	9. Barakuti.
		26. Bangalipur.	
		27. Kamarpukur.	
	10. Mahimaganj (Jute Agricultural Demonstrator).	28. Pacharia ..	10. Sreemukh.
		29. Kadiagari.	
		30. Kucharshahar.	
	11. Ulipur (Jute Agricultural Demonstrator).	31. Narikelbari ..	11. Ulipur.
		32. Ulipur.	
		33. Bejoyram Tabakram.	
Dinajpur ..	1. Sadar ..	1. Surihari ..	1. Karapara.
Demonstration Centres .. 18		2. Digenbari.	
Union Boards 6		3. Gobrapara.	
	2. Manmathapur ..	4. Manmathapur ..	2. Gobindapur.
		5. Jasaihat.	
		6. Chitpukur.	
	3. Raiganj ..	7. Udaypur ..	3. Goalpara.
		8. Soharai.	
		9. Raiganj.	
	4. Pirganj ..	10. Birhali ..	4. Mitrabati.
		11. Paligaon.	
		12. Khedra Gurgaon.	
	5. Birampur ..	13. Sharangipur ..	5. Mamadpur.
		14. Harhariapara.	
		15. Janipur.	
	6. Kaliganj (Jute Agricultural Demonstrator).	16. Akhanagar ..	6. Bhandar.
		17. Shergaon.	
		18. Tarangapur.	
Jalpaiguri ..	1. Maynaguri ..	1. Ulladabri ..	1. Tikatuli.
Demonstration Centres .. 27		2. Mowamari.	
Union Boards 9		3. Madhabdangri.	
	2. Jalpaiguri ..	4. Khariagoshala ..	2. Mandalghat.
		5. Pandapara.	
		6. Panga.	
	3. Pachagarh ..	7. Benghari ..	3. Haripur dighi.
		8. Jatanpukri.	
		9. Panchagarh.	
	4. Pargram ..	10. Shohagpur ..	4. Jagatber.
		11. Kotali.	

District.	Agricultural Demonstrator's headquarters.	Demonstration Centres.	Union Board Farms.
		12. Dhabalsati.	
	5. Alipur Duars ..	13. Alipur Duars ..	5. Changapra.
		14. Chaparerpar.	
		15. Jitpur.	
	6. Dhupguri ..	16. Bairatiguri ..	6. Uttar-Goshairhat.
		17. Altagram.	
		18. Kholagram.	
	7. Rajgunge ..	19. Rajgunge ..	7. Kismatshukhani.
		20. Ambarifalakata.	
		21. Majhiali.	
	8. Samuktola (Jute Agricultural Demonstrator).	22. Baniagaon ..	8. Mahakalguri.
		23. Baniadabri.	
		24. Barachowkirbosh.	
	9. Debiganj (Jute Agricultural Demonstrator).	25. Debiganj ..	9. Pamuli.
		26. Debiduba.	
		27. Sonapata.	
Malda ..	1. Sadar ..	1. Kamaolabari ..	1. Lakhipur.
Demonstration Centres .. 18		2. Malia	
Union Boards 6		3. Rasiladaha.	
	2. Iho	4. Rohanpur. ..	2. Iho.
		5. Bholarhat.	
		6. Santail.	
	3. Kansat ..	7. Baitpur ..	3. Kansat.
		8. Biswanathpur.	
		9. Shibganj.	
	4. Harishchandrapur ..	10. Santoshpur ..	4. Harishchandrapur.
		11. Bhangura.	
		12. Sultan Nagar.	
	5. Nawabganj ..	13. Durgapur ..	5. Chak Alampur-Chapal-Nawabganj.
		14. Batiadanga.	
		15. Ramgibanpur.	
	6. Chanchal Jute Agricultural Demonstrator.)	16. Malatipur ..	6. Chanchal.
		17. Kaligaon.	
		18. Mobarakpur.	

Total 155 Demonstration Centres and 51 Union Board Farms.

APPENDIX II.

Results of Demonstration Centres of Bogra district for the year 1940-41 (under Agricultural Demonstrator, Khanjanpur).

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc.).
			From Government Farm.	By purchase.				
1	2	3	4		5	6		7
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
3	98	*Aus* paddy ..	6 0 0	..	6·00	115 0 0	9,200	
		Aman Paddy ..	9 0 0	..	24·00	418 20 0	33,480	
		Joar	..	1 8 0	2·00	369 0 0	29,520	
		Napier grass ..	12 0 0	..	1·00	271 0 0	21,680	
		Gram S. 4 ..	1 2 0	..	2·00	14 35 0	1,190	
		Lentil No. 5 ..	0 36 0	..	2·00	15 0 0	1,200	
		Mustard (Tori 7) ..	0 9 0	..	2·00	17 0 0	1,360	
		Wheat ..	1 5 0	..	1·00	9 15 0	750	
		Pea	..	0 21 0	1·00	2 25 8	201	
		Motihari tobacco	6 tolas	..	2·00	12 23 0	1,006	
		English vegetables ..	..	20 packets	·50	Rs. 160	..	
		Oats and.. ..	..	0 15 0	} 1·00	123 0 0	9,840	
		Peas	..	0 15 0	}			
		Sugarcane ..	6,000 sets	..	·50	Standing	..	
		Sunn-hemp ..	..	0 36 0	3·00	Green manured	..	

Results of Demonstration Centres of Bogra district for the year 1940-41 (under Agricultural Demonstrator, Sherpur).

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc.).
			From Government Farm.	By purchase.				
1	2	3	4		5	6		7
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
3	50	*Aman* paddy ..	9 0 0	..	6·00	87 20 0	7,000	Transplanting could not be done for want of water.
		Gram S. 4 ..	1 2 0	..	2·00	22 0 0	1,760	
		Lentil No. 5 ..	0 36 0	..	2·00	11 18 0	916	
		Mustard (Tori 7) ..	0 9 0	..	2·00	8 12 0	664	
		Wheat ..	1 5 0	..	1·00	6 19 0	518	
		Motihari tobacco ..	6 tolas.	..	2·00	3 16 0	272	
		Pea	..	0 21 0	1·00	10 18 0	836	
		Oats and ..	..	0 15 0	1·00	55 0 0	4,400	
		Peas	..	0·15 0				
		English vegetables ..	..	20 packets.	·50	Rs. 195	..	
		Napier grass ..	12 0 0	..	·64	64 0 0	5,040	
		Sugarcane ..	6,000 sets	..	·50	Standing.	..	

Results of Demonstration Centres of Bogra district for the year 1940-41 (under Agricultural Demonstrator, Dubchanchia).

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government Farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5	6		7
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
3	113	*Aus* paddy ..	6 0 0	..	6·00	56 20 0	4,520	
		Aman paddy ..	9 0 0	..	24·00	422 15 0	33,790	
		Joar	..	1 8 0	2·00	434 0 0	34,720	
		Napier grass ..	12 0 0	..	1·00	82 0 0	6,560	
		Gram S. 4 ..	1 2 0	..	2·00	15 5 0	1,210	
		Lentil No. 5 ..	0 36 0	..	2·00	15 23 0	1,246	
		Mustard (Tori 7) ..	0 9 0	..	2·00	11 15 0	910	
		Wheat	1 5 0	..	1·00	5 22 0	444	
		Pea	..	0 21 0	1·00	6 2 0	484	
		Motihari tobacco ..	6 tolas	..	2·00	12 10 0	980	
		English vegetables ..	..	20 packets	·50	Rs. 171	..	
		Sugarcane ..	6,000 sets	..	·50	Standing	..	
		Oats and ..	..	0 15 0	1·00	207 0 0	17,360	
		Peas	..	0 15 0				
		Sunnhemp ..	..	0·36 0	3·00	Green manured	..	

Results of Demonstration Centres of Bogra district for the year 1940-41 (under Agricultural Demonstrator, Sonatala).

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc.).
			From Government Farm.	By purchase.				
1	2	3	4		5	6		7
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
3	102	*Aman* paddy ..	9 0 0	..	15·45	387 2 0	31,120	
		Gram S. 4 ..	1 2 0	..	2·00	25 29 0	2,078	
		Lentil No. 5 ..	0 36 0	..	2·00	5 23 0	476	
		Mustard (Tori 7) ..	0 9 0	..	2·00	15 16 0	1,232	
		Wheat ..	1 5 0	..	1·00	10 9 0	818	
		Motihari tobacco ..	6 tolas	..	2·00	8 9 0	658	
		Pea	..	0 21 0	1·00	3 0 0	240	
		Oats and ..	..	0 15 0	1·00 (Oats and Peas)	114 0 0	9,120	
		Peas	..	0 15 0				
		English vegetables ..	..	20 packets	·50	Rs. 47	..	
		Napier grass ..	12 0 0	..	1·00	50 0 0	4,000	
		Sugarcane ..	6,000 sets	..	·50	Standing	..	

Results of Demonstration Centres of Bogra district for the year 1940-41 (under Agricultural Demonstrator, Mokamtala).

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc.).
			From Government Farm.	By purchase.				
1	2	3	4		5	6		7
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
3	111	*Aus* paddy ..	6 0 0	..	6·00	129 15 0	10,350	
		Aman paddy ..	9 0 0	..	24·00	628 32 0	50,304	
		Joar	..	1 8 0	2·00	180 0 0	14,400	
		Napier grass ..	12 0 0	..	1·00	170 0 0	13,600	
		Gram S. 4 ..	1 2 0	..	2·00	22 7 0	1,774	
		Lentil No. 5 ..	0 36 0	..	2·00	20 30 0	1,660	
		Mustard (Tori 7) ..	0 9 0	..	2·00	14 35 0	1,190	
		Wheat ..	1 5 0	..	1·00	10 25 0	850	
		Pea	..	0 21 0	1·00	8 15 0	670	
		Motihari tobacco	6 tolas	..	2·00	16 30 0	1,310	
		English vegetables	..	20 packets	·50	Rs. 46	..	
		Sugar cane ..	6,000 sets	..	·50	tanding crops.		
		Oats and ..	..	0 15 0 }	1.00	38 0 0	3,040	
		Peas ..	..	0 15 0 }				
		Sunn-hemp ..	..	0 36 0	3·00	Green manured.	..	

The results of cultivation in the Demonstration Centres of Bogra district during 1940-41.

Total number of Demonstration Centres in the district.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government Farm.		Quantity of seed supplied. By purchase.		Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
		Kharif.	Md. sr. ch.	Lbs.	Md. sr. ch.	Lbs.		Md. sr. ch.	Lbs.	
15	474	*Aus* paddy ..	18 0 0	1,440	..	..	18·00	300 35 0	24,070	6 new centres were not supplied with seeds.
		Aman paddy	45 0 0	3,600	..	..	120·00	1,944 9 0	155,694	Drought affected the crop 18·00 to tally failed.
		Jute C. G. ..	..	..	..	..	..	..	..	
		Joar (fodder)	..	..	3 24 0	288	6·00	983 0 0	78,640	Drought affected the crops.
		Napier grass	60 0 0	4,800	..	..	5·00	636 0 0	73,880	
		Cowpea ..	..	..	..	..	..	..	..	
		Rabi.								
		Sabour gram ..	5 10 0	420	..	..	10·00	99 36 0	8,012	
		Mustard (Tori 7)	1 5 0	85	..	..	10·00	66 38 0	5,356	
		Wheat P 52 ..	5 25 0	450	..	..	5·00	42 10 0	80	
		Lentil No. 5	4 20 0	360	..	..	10·00	68 14 0	5,498	
		Motihari tobacco ..	30 tolas	..	..	..	10·00	53 8 0	4,226	
		White Patna peas	..	..	2 25 0	210	5·00	30 20 8	2,441	
		Cauliflower ..	..	..	120 pkts.	} ..	} 2·50	} Rs. 619	} ..	
		Cabbage ..	..	..	90 „					
		Tomato ..	..	..	90 „					
		Oats and } Fodder	..	..	1 35 0	150	} 5·00	} 537 0 0	} 43,760	
		Peas } Fodder	..	..	1 35 0	150				
		Sugarcane ..	30,000 sets	..	..	..	..	Crops standing.	..	

Results of Union Board Farms of the Bogra district for the year 1940-41 (under Agricultural Demonstrator, Mokamtala).

Name of Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Government Farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5	6		7
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
Amjani Union Board Farm.	Hatemuddin Pramanik.	*Aus* paddy ..	..	..	1·50	36 0 0	2,880	
		Aman paddy ..	..	..	4·00	92 25 0	7,410	
		Jute ..	..	0 1 0	·33	13 0 0	1,040	
		Joar ..	..	0 8 0	·33	40 0 0	3,200	
		Napier grass ..	..	..	·17	30 0 0	2,400	
		Gram S. 4 ..	0 7 0	..	·33	5 0 0	400	
		Lentil No. 5 ..	0 6 0	..	·33	3 10 0	260	
		Mustard (Tori 7) ..	0 1 8	..	·33	3 0 0	240	
		Wheat ..	0 15 0	..	·33	..	..	Fail for drought.
		English vegetables ..	..	20 pkts.	·17	Rs. 20	..	
		Motihari tobacco ..	½ tola	..	·17	2 10 0	180	
		Oats and ..	..	0 4 0	·17	9 0 0 (Oats and Peas)	720	
		Peas ..	..	0 2 8	·17			
		Sugarcane ..	2,000 sets	..	·17	Standing.	..	

Dubchanchia-Gobindapur Union Board Farm.	....	*Aus* paddy ..	..	..	[illegible]	[illegible]	[illegible]	
		Aman paddy ..	..	..	4·00	74 20 0	6,000	
		Jute ..	..	0 1 0	·33	7 35 0	630	
		Joar ..	..	0 8 0	·33	100 0 0	8,000	
		Napier grass ..	..	..	·17	35 0 0	2,800	
		Gram S. 4 ..	0 7 0	..	·33	2 20 0	200	
		Lentil No. 5 ..	0 6 0	..	·33	1 12 0	104	
		Mustard (Tori 7) ..	0 1 8	..	·33	1 20 0	120	
		Wheat ..	0 15 0	..	·33	1 0 0	80	
		English vegetables ..	..	20 pkts.	·17	Rs. 30	..	
		Motihari tobacco ..	½ tola	..	·17	1 20 0	120	
		Oats and Peas ..	..	0 4 0 / 0 2 8	·17	45 0 0	3,600	
		Sugarcane ..	2,000 sets	..	·17	Standing.		
Sonatala-Kabilpur Union Board Farm.	Kandu Akanda ..	*Aman* paddy ..	1 20 0	..	4·00	78 0 0	6,240	
		Mustard (Tori 7) ..	0 1 8	..	·33	2 10 0	180	
		Lentil No. 5	0 6 0	..	·33	4 10 0	340	
		Wheat ..	0 15 0	..	·33	4 0 0	320	
		Gram S. 4 ..	0 7 0	..	·33	4 25 0	370	
		Oats and Peas ..	..	0 4 0 / 0 2 8	·17	20 0 0	1,600	
		English vegetables ..	..	20 pkts.	·17	..	..	Failed.
		Napier grass ..	2 0 0	..	·17	Do.		
		Motihari tobacco ..	½ tola	..	·17	0 30 0	60	
		Sugarcane ..	2,000 sets	..	·17	Standing.		
Khanjanpur-Bogri Union Board Farm.	Hatemali Mondal..	*Aus* paddy ..	..	..	1·50	43 20 0	3,480	
		Aman paddy ..	..	..	4·00	66 30 0	5,340	
		Jute ..	..	0 1 0	·33	8 0 0	640	

Name of Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc.).
			From Government Farm.	By purchase.				
1	2	3	4		5	6		7
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
		Joar ..	..	0 8 0	·33	50 0 0	4,000	
		Napier grass ..	..	..	·17	50 0 0	4,000	
		Gram S. 4 ..	0 7 0	..	·33	1 20 0	120	
		Lentil No. 5 ..	0 6 0	..	·33	3 0 0	240	
		Mustard (Tori 7) ..	0 1 8	..	·33	3 0 0	240	
		Wheat ..	0 15 0	..	·33	4 0 0	320	
		English vegetables ..	..	20 pkts.	·17	..	..	Crop failed due to drought.
		Motihari tobacco ..	½ tola	..	·17	1 20 0	120	
		Oats and ..	..	0 4 0	·17	25 0 0	2,000	
		Peas ..	..	0 2 8				
		Sugarcane ..	2,000 sets	..	·17	Standing.		
Sherpur-Mohipur Union Board Farm.	Fanindra Mohan Maitra.	Mustard (Tori 7) ..	0 1 8	..	·33	Failed.		
		Lentil No. 5 ..	0 6 0	..	·33	Do.		
		Wheat ..	0 15 0	..	·33	0 20 0	40	
		Gram S. 4 ..	0 7 0	..	·33	0 25 0	50	
		Oats and ..	..	0 4 0	·17	..	..	Failed.
		Peas ..	..	0 2 8				
		English vegetables ..	..	20 pkts.	·17	Rs. 7.		
		Napier grass ..	2 0 0	..	·17	..	..	Failed.
		Motihari tobacco ..	½ tola	..	·17	0 5 0	10	
		Sugarcane ..	2,000 sets	..	·17	Standing.		

The results of cultivation in the Union Board Farms of Bogra district during 1940-41

Name of District.	Total number of Union Board Farm.	Name of crop.	Quantity of seed supplied. From Government Farm. Md. sr. ch.	From Government Farm. Lbs.	By purchase. Md. sr. ch.	By purchase. Lbs.	Total area in acres sown under each crop.	Total outturn of each crop. Md. sr. ch.	Total outturn of each crop. Lbs.	Remarks (cause of failure and damage, etc.).
1	2	3	4				5	6		7
Bogra ..	5 ..	*Kharif.*								
		Aus paddy ..	..	..	..	..	4·50	98 15 0	7,870	4 acres could not be transplanted for want of water.
		Aman paddy ..	3 0 0	240	..	..	16·00	311 35 0	24,950	
		Jute C. G. ..	..	..	0 3 0	6	1·00	28 35 0	2,310	2 farms were not supplied with joar seeds.
		Joar (fodder) ..	..	..	0 24 0	48	1·00	190 0 0	15,200	
		Napier grass ..	4 0 0	320	..	..	·83	115 0 0	9,200	
		Cowpea ..	..	..	..	..	..	..	..	
		Rabi.								
		Sabour gram ..	0 35 0	70	..	..	1·66	14 10 0	1,140	Crop badly affected by drought.
		Mustard (Tori 7) ..	0 7 8	15	..	..	1·66	9 30 0	780	Crop badly affected by drought and 1 bigha altogether failed.
		Wheat, P. 52 ..	1 35 0	150	..	..	1·66	9 20 0	760	Crop badly affected by drought and 2 bighas failed.
		Lentil No. 5	0 30 0	60	..	..	1·66	11 32 0	944	Crop badly affected by drought and 1 bigha failed.
		Linseed 18B.					·83	6 5 0	490	Ditto.
		Motihari tobacco ..	2¼ tolas	..	..	..	..	..	..	
		Patna white pea ..	..	..	..	..	..	..	..	
		Potato (Rangoon)	..	..						
		Cauliflower ..	..	..	40 pkts.	..	·83	Rs. 57	..	Crop of 2 farms totally damaged by insects.
		Cabbage ..	..	..	30 pkts.					
		Tomato ..	..	..	30 pkts.					
		Oats and } Fodder	..	..	0 20 0	40	·83	99·0 0	7,920	Crop of 1 bigha failed.
		Peas } Fodder	..	..	0 10 0	20				
		Sugarcane ..	10,000 sets	..	..	..	..	Crop standing.		

The result of cultivation of Demonstration Centres at different places in the district of Pabna during the year 1940-41.

Serial No.	Total number of Demonstration Centres under each Agricultural Demonstrator.		Total number of cultivators to whom seeds, etc., supplied.	Name of crops.	Quantity of seeds supplied. From Government Farms.	By purchase.	Total area under each crop in acre.	Total outturn of each crop both maunds and lbs.		Remarks (cause of failure, etc., to be given in short).
1	2		3	4	5	6	7	8	9	10
		Nos.	lbs.		Md. sr. ch.	Md. sr. ch.	lbs.	Md. sr. ch.	lbs.	
				Kharif.						
1	Agricultural Demonstrator, Ishurdi.	3	60	Dharial *aus*	24 0 0	..	24·00	266 36 0	21,284	
2	Agricultural Demonstrator, Ullapara.	3	30	Joar fodder	..	6 0 0	2·00	3,203 0 0	259,778	Feed to the cattle as green staff and silage. P
3	Agricultural Demonstrator, Serajganj.	3	119	Napier grass	72 0 0	..	6·00	1,080 0 0	88,080	
4	Agricultural Demonstrator, Ataikula.	3	67	Transplanted *aman* paddy ..	36 0 0	..	92·33	82 37 0	7,007	
5	Agricultural Demonstrator, Sadar.	3	42	Broadcasted *aman* paddy ..	36 0 0	..	36·33	170 26 0	13,940	
6	Agricultural Demonstrator, Berar.	3	42							
		18	360	Sunnhemp	..	10 20 0	20·00	Ploughed down for G. M.		
				Rabi.						
				Wheat 52	6 30 0	..	18·00	43 0 0	3,526	
				Gram S. 4	6 12 0	..	12·00	80 0 0	6,560	
				Lentil No. 5	5 16 0	..	12·00	78 0 0	6,396	
				Pea	1 6 0	..	6·00	21 0 0	1,722	
				Oats and peas mixture ..	..	2 20 0	3·00	300 0 0	2,460	
				Tori No. 5	1 14 0	..	12·00	51 5 0	19,192	
				English vegetables ..	..	276 pkts.	2·00	Rs. 900 0 0	..	
				Burma potato	..	18 0 0	2·00	127 0 0	10,441	
				Motihari tobacco ..	72 tolas.	..	12·00	100 0 0	8,200	
				Agartalakalai	1 8 0	..	2·66	443 0 0	3,642	

N. B.—Outturn of Dharial *aus* paddy is poor due to insufficient rainfall. Most of the area under transplanted *aman* paddy was totally damaged due to drought. Broadcasted *aman* at Ishurdi was totally damaged and others partly. Pea damaged at Ishurdi and Ullapara. Tori No. 7 damaged at Ishurdi and in others not successfully grown due to drought.

The results of Cultivation of Demonstration Centres in the district of Pabna during the year 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of of each crop.	Remarks (cause of failure and damage, etc.).
			From Government farms.	By purchase.			
1	2	3	4	5	6	7	8
		Rabi.	Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	
Agricultural Demonstrator, Bera 3.	42	Tori No. 7	0 9 0	..	2·00	4 29 0	
		Grams S. 4	1 2 0	..	2·00	19 29 0	
		Lentil No. 5	0 36 0	..	2·00	5 5 0	..
		Peas	0 21 0	..	1·00	Totally damaged due to drought.	
		Wheat P. 52	1 5 0	..	1·00	Ditto.	
		Tomato (Buram)	..	3 0 0	·33	15 24 0	
		Oats	..	0 19 0	·33	Damaged.	
		Tobacco (Motihari) ..	6 tolas	..	2·00	20 0 0	
		English vegetables ..	..	46 pkts.	1·00	Rs. 150-7	S. P.

N. B.—Outturn of the crops is poor due to drought.

The results of cultivation in the Demonstration Centres of the district of Pabna during the year 1940-41.

Union Board Farms.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied. From Government farms.	Quantity of seeds supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop.	Remarks (cause of failure and damage, etc.).
1	2	3	4	5	6	7	8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	
		Rabi.					
Agricultural Demonstrator, Pabna, Sadar 3.	42	Grams S. 4	1 2 0	..	2·00	15 16 0	
		Lentil No. 5	0 36 0	..	2·00	17 1 0	
		Tori No. 7	0 9 0	..	2·00	7 32 0	
		Tobacco (Motihari) ..	6 total	..	2·00	20 0 0	
		Wheat P. 53	1 5 0	..	1·00	4 24 0	
		Potato	..	3 0 0	·33	12 29 0	
		Peas	0 21 0	..	1·00	5 11 0	
		Agartala kalai	0 18 0	..	1·00	200 0 0	Fodder.
		English vegetables ..	..	46 pkts.	·51	Rs. 152	

N. B.—Outturn of each crop is too low due to drought.

The results of cultivation in the Demonstration Centres in the district of Pabna during the year 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied. From Government farms.	Quantity of seeds supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop.	Remarks (cause of failure and damage, etc.).
1	2	3	4	5	6	7	8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	
Agricultural Demonstrator, 3 Ataikula.	67	Dharial *aus* paddy	6 0 0	..	6·00	64 36 0	
		Transplanted *aman* paddy ..	6 30 0	..	18·00	46 27 0	
		Broadcasted *aman* paddy ..	6 0 0	..	6·00	25 1 0	
		Napier grass	12 0 0	..	2·00	45 0 0	
		Joar fodder	..	1 8 0	2·00	1,045 0 0	
		Agartala kalai	0 18 0	..	1·00	243 0 0	
		Rabi.					
		Motihari tobacco	6 tolas.	..	2·00	16 0 0	
		Potato	..	3 0 0	·33	20 22 0	
		Tori No. 7	0 9 0	..	2·00	16 9 0	
		Lentil No. 5	0 36 0	..	2·00	15 31 0	
		Gram S. 4	1 2 0	..	2·00	18 0 0	
		Wheat P. 52	1 5 0	..	2·00	15 0 0	
		Peas	0 21 0	..	1·00	15 31 0	
		English vegetables.. ..	..	46 pkts.	·50	2,720 Vegetables.	

N. B.—Outturn of each crop is very poor due to drought.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of each crop.	Remarks (cause of failure and damage, etc.).
			From Government farms.	By purchase.			
1	2	3	4	5	6	7	8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	
Agricultural Demonstrator, Serajganj ..3	119	Dharial *aus* paddy ..	6 0 0	..	6·00	120 0 0	
		Transplanted *aman* paddy ..	2 10 0	..	2·33	39 10 0	
		Broadcasted *aman* paddy ..	18 0 0	..	18·33	120 0 0	
		Cowpea	..	0 15 0	·50	60 0 0	Fodders.
		Joar	..	1 8 0	2·00	534 0 0	
		Napier grass	12 0 0	..	1·00	60 0 0	
		Rabi.					
		Motihari tobacco	6 tolas	..	2·00	24 15 0	
		Wheat P. 52	1 5 0	..	2·00	14 20 0	
		Tori No. 7	0 9 0	..	2·00	16 15 0	
		Gram S. 4	1 2 0	..	2·00	19 0 0	
		Lentil No. 5	0 36 0	..	2·00	18 0 0	
		Patna Peas	..	0 21 0	1·00	7 35 0	
		Oats and peas mixture ..	..	1 18 0	1·00	150 0 0	
		Burma potato	..	35 0 0	·33	17 20 0	
		English vegetables ..	..	46 pkts.	·50	Rs. 205	

		English vegetables	..	46 pkts.	·50	Rs. 205	
Agricultural Demonstrator, Ullapara .. 3	30	*Dharial ausp addy* ..	6 0 0	..	6·00	31 0 0	Outturn is too poor due to insufficient rain. Dried up.
		Transplanted *aman* paddy ..	6 0 0	..	6·00	25 0 0	
		Broadcasted *aman* paddy ..	6 30 0	..	18·00	2 0 0	
		Joar fodder	..	1 8 0	2·00	900 0 0	
		Sunnhemp	..	2 25 0	5·00	Ploughed down for G. M.	
		Napier grass	12 0 0	..	1·00	180 0 0	
		Rabi.					
		Potatoes (Burma) ..	..	3 0 0	·33	30 0 0	
		Motihari tobacco	6 tolas	..	2·00	12 0 0	
		Gram S. 4	1 2 0	..	2·00	12 0 0	
		Lentil No. 5	0 36 0	..	2·00	7 0 0	
		Wheat P. 52	1 5 0	..	2·00	2 0 0	
		Tori No. 7	0 9 0	..	2·00	6 0 0	
		Oats and peas mixture ..	..	0 25 8	1·00	120 0 0	
		Cauliflower		24 pkts.	·33 (Cauliflower, Cabbage, Tomato)	Rs. 30	
		Cabbage	..	18 ,,			
		Tomato	..	14 ,,			

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of each crop.	Remarks (cause of failure and damage, etc.).
			From Government farms.	By purchase.			
1	2	3	4	5	6	7	8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	
Agricultural Demonstrator, Ishurdi 3D. C.	60	Dharial *aus* paddy	6 0 0	..	6·00	51 0 0	
		Transplanted *aman* paddy ..	6 30 0	..	23·66	..	Damaged by drought.
		Broadcasted *aman* paddy ..	6 0 0	..	6·00	..	Ditto.
		Joar fodder	..	1 8 0	2·00	724 0 0	
		Sunnhemp	..	3 0 0	5·00	Ploughed down for G. M.	
		Napier grass	12 0 0	..	1·00	800 0 0	
		Rabi.					
		Motihari tobacco	6 tolas	..	2·00	16 0 0	
		Agartala kalai	0 12 0	..	·00	..	Damaged by drought.
		Tori No. 7	0 7 0	..	2·66	..	Ditto.
		Gram S. 4	1 2 0	..	2·00	18 0 0	
		Wheat P. 52	1 5 0	..	2·00	10 0 0	
		Lentil No. 5	0 36 0	..	2·00	15 0 0	
		Burma potato	..	3 0 0	·33	30 0 0	..
		Cabbage	..	14 pkts. }	·33	9,000 Vegetables.	
		Cauliflower	..	18 ,, }			
		Tomato	..	14 ,, }			
		Patna white peas	0 21 0	..	·33	30 0 0	

Consolidated results of cultivation in the Union Board Farms of the Pabna district during the year 1940-41.

Name of district.	Total No. of Union Board Farm.	Name of crop.	Quantity of seed supplied. From Government Farm.	By purchase.	Total area in acres sown under each crop.	Total outturn of each crop.	Remarks (causes of failure and damage, etc.).
1	2	3	4	5	6	7	8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	
		Kharif.					
Pabna ..	6 ..	Dharial *aus* paddy ..	4 0 0	..	3·66	52 0 0	Outturn very poor due to drought, in case of almost all the crops.
		P×S(8) *aus* paddy ..	0 13 0	..	·33	7 20 0	
		Jute, C. G.	0 4 0	..	1·33	46 0 0	
		Joar	..	0 16 0	·66	234 0 0	
		Transplanted *aman* paddy ..	3 0 0	..	5·33	83 0 0	
		Broadcasted *aman* paddy ..	4 0 0	..	5·66	31 0 0	
		Sunnhemp	..	1 20 0	1·33	Ploughed down for G. M.	
		Napier grass	12 0 0	..	1·17	310 0 0	
		Rabi.					
		Wheat P. 52	1 20 0	..	2·33	14 10 0	
		Gram S. 4	0 28 0	..	2·33	23 0 0	
		Lentil No. 5	1 20 0	..	2·33	12 0 0	
		Tori No. 7	0 1 8	..	2·33	6 28 0	
		Oats and peas mixture ..	1 8 0	..	1·66	100 0 0	
		Tobacco (Motihari) ..	3 tolas.	..	1·17	9 26 0	
		Burma potato	..	11 20 0	1·17	90 0 0	
		Cauliflower } Cabbage } Tomato }	..	96 pkts.	1·17	L. S. Rs. 91-10. 0	

The results of cultivation in the Union Board Farms at Iswardi in the district of Pabna, 1940-41.

Name of each Union Board Farm.	Name of owner.	Quantity of seeds supplied. From Government Farm.	Quantity of seeds supplied. By purchase.	Name of crops.	Total area in acres sown under each crops.	Total outturn of each crops in both mds. and lbs.		Remarks (causes of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
		Md. sr. ch.	Md. sr. ch.	*Kharif.*		Md. sr. ch.	lbs.	
Patilakhali Union Board Farm.	Easarat Ali Shaik.	1 0 0	..	Dharial *aus*	1·00	15 0 0	1,230	
		0 4 0	..	Joar	·17	66 0 0	5,412	Fed to the cattle.
		0 1 0	..	Jute	·33	6 0 0	492	(Fibre.)
		0 20 0	..	Transplanted *aman* paddy	2·66	8 0 0	574	
		..	..	Broad casted *aman* ..	1·00	12 0 0	984	
		1 0 0	0 15 0	Sunnhemp	·66	Ploughed down for G. M.		
		2 0 0	..	Napier grass	·17	150 0 0	12,300	
				Rabi.				
		0 15 0	..	Wheat 52	·33	3 10 0	266	
		0 7 0	..	Gram (S. 4)	·33	9 0 0	738	
		0 15 0	..	Lentil No. 5 ..	·33	2 20 0	305	
		0 1 8	..	Tori No. 7	·33	Totally damaged.		
		0 3 0	..	Peas and oats mixture ..	·17	40 0 0	3,280	(Fodder.)
		0 8 0	..	Agartala kalai ..	·33	Damaged due to drought.		
		½ tola	..	Motihari tobacco ..	·17	1 10 0	102	
		16 pkts.	..	English vegetables ..	·17	Rs. 50.		

The results of cultivation in the Union Board Farm of Ullapara in the district of Pabna during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crops.	Quantity of seeds supplied. From Government Farm.	Quantity of seeds supplied. By purchase.	Total area in acres sown under each crops.	Total outturn of each crops in both mds. and lbs.		Remarks (causes of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Battakak	Babu Jotish Chandra Das.	Dharial *aus*	1 0 0	..	1·00	8 0 0	240	·33 dried up due to drought.
		Jute	0 1 0	..	·33	6 0 0	480	
		Broad casted *aman* ..	1 0 0	..	1·00	Nil. Totally damaged.		
		Transplanted *aman* paddy	1 0 0	..	2·65	Ditto.		
		Joar fodder	0 4 0	..	·17	75 0 0	6,000	Green fodder fed to cattle.
		Sunnhemp	..	0 28 0	1·33	Ploughed down as G. M.		
		Napier grass	2 0 0	..	·17	40 0 0	3,200	
		Rabi.						
		Wheat P. 52 ..	0 15 0	..	·33	1 20 0	1,201	
		Gram S. 4	0 7 0	..	·33	0 20 0	41	
		Lentil No. 5	0 6 0	..	·33	1 20 0	120	
		Tori No. 7	0 1 8	..	·33	0 20 0	42	
		Oats and peas mixture	0 13 0	..	·33	40 20 0	3,200	
		Matihari tobacco ..	½ tola.	..	·17	2 0 0	160	
		Burma potato ..	..	3 20 0	·33	20 0 0	1,600	

The results of cultivation in the Union Board Farm at Serajganj in the district of Pabna during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crops.	Quantity of seeds supplied. From Government Farm.	Quantity of seeds supplied. By purchase.	Total area in acres sown under each crops.	Total outturn of each crops in both mds. and lbs.		Remarks (causes of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Teghaori ..	Maulvi Minnat Ali Talukder.	Dharial *aus*	..	..	·66	16 0 0	1,440	Seeds from owner.
		P×S. 8 *aus* ..	..	..	·33	7 20 0	600	Ditto.
		C. G. jute	0 1 0	..	·33	10 0 0	820	
		Joar fodder	0 4 0	..	·17	45 0 0	3,600	
		Sunnhemp	..	0 15 0	·66	Ploughed down for G. M.		
		Indrasail *aman* ..	..	..	1·00	12 0 0	960	Seeds from owner.
		Tilakkachary ..	..	..	2·66	7 5 0	570	Ditto.
		Napier grass	2 0 0	..	·17	20 0 0	1,600	
		Motihari tobacco ..	½ tola	..	·17	1 10 0	100	
		English vegetables ..	..	20 pkts.	·17	Rs. 5, value of products. Part of plots was damaged.		
		Wheat P. 52	0 15 0	..	·33	4 0 0	320	
		Tori No. 7	0 1 8	..	·33	2 10 0	180	
		Grams S. 4 ..	..	..	·33	5 0 0	400	Seeds from owner's stock.
		Lentil No. 5	..	..	·33	4 0 0	320	Ditto.
		Oats and peas ..	0 15 0	..	·33	25 0 0	2,000	Used as fodder.
		Potato	..	3 0 0	·33	20 0 0	1,640	

N. B.—·33 acre Indrasail *aman* paddy was damaged due to drought.
2·33 acres Tilakkachary paddy was damaged due to drought.
Outturn of each crop is unsatisfactory due to drought.

N. B.—·33 acre Indrasail *aman* paddy was ...
2·33 acres Tilakkachary paddy was damaged due to drought.
Outturn of each crop is unsatisfactory due to drought.

The results of cultivation in the Union Board Farm at Ataikula in the district of Pabna during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crops.	Quantity of seeds supplied. From Government Farm.	By purchase.	Total area in acres sown under each crops.	Total outturn of each crops in both mds. and lbs.		Remarks (causes of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Ataikula ..	Moezuddin Biswas.	Dharial *aus* ..	..	..	1·00	13 0 0	1,066	Seeds from owner.
		Aman (Transplanted) ..	..	..	2·66	17 0 0	1,394	Ditto.
		Aman (Broadcasted) ..	..	..	1·00	8 0 0	665	Ditto.
		Joar	0 4 0	..	·17	48 0 0	3,936	
		Sunnhemp	..	0 15 0	1·33	Ploughed down for G. M.		
		Napier grass	2 0 0	..	·17	100 0 0	8,200	
		Agartala kalai ..	0 6 0	..	·33	78 0 0	6,396	
		Motihari tobacco ..	½ tola	..	·17	1 6 0	94	
		Potato	..	3 0 0	·17	10 0 0	820	
		English vegetable ..	..	20 pkts.	·17	Rs. 5		Damaged due to drought.
		Tori No. 7	0 1 8	..	·33	2 0 0	164	Seeds from owners.
		Lentil No. 5	..	..	·33	3 0 0	246	
		Jute	0 1 0	..	·33	4 0 0	328	Seeds from owners.
		Gram S. 4	..	..	·33	4 0 0	328	
		Wheat P. 52	..	..	·33	2 0 0	162	

N. B.—Transplanted and broadcasted *aman* paddy damaged due to drought in some places.

The results of the cultivation in the Union Board Farm at Dupkhola (Pabna Sadar) during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crops.	Quantity of seeds supplied.		Total area in acres sown under each crops.	Total outturn of each crops in both mds. and lbs.		Remarks (causes of failure and damage, etc., to be given in short).
			From Government Farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Dhupkhola	Babu Nadia Behari Basak.	Gram S. 4	0 7 0	..	·33	2 0 0	162	
		Lentil No. 5	0 6 0	..	·33	2 20 0	200	
		Tori No. 7	0 1 8	..	·33	1 0 0	82	
		Motihari tobacco ..	½ tola	..	·17	2 0 0	162	
		Wheat P. 52 ..	0 13 0	..	·33	1 20 0	120	
		Agartala kalai ..	0 7 0	..	·33	10 0 0	820	Fodder.
		Potato	3 20 0	..	·33	20 0 0	1,600	
		English vegetables ..	..	20 pkts.	·17	Rs. 40.		

N. B.—Outturn of crops is very poor due to drought.

N. B.—Outturn of crops is very poor due to drought.

The results of cultivation in the Union Board Farm at Bera in the district of Pabna during the year 1940-41.

Name of Union Board Farm.	Name of owners.	Name of crops.	Quantity of seeds supplied. From Government farm.	Quantity of seeds supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks (causes of failure and damage, etc., to be given in short).
			Md. sr. ch.			Md. sr. ch.		
Karanja ..	Maulvi Abdul Karim.	English vegetables ..	..	20 pkts.	·33	Rs. 17	Sale proceeds.	
		Tori No. 7 ..	0 1 8	..	·33	0 38 0	76	
		Gram S. 4 ..	0 7 0	..	·33	3 0 0	246	
		Lentil No. 5 ..	0 6 0	..	·33	2 0 0	162	
		Wheat P. 52 ..	0 15 0	..	·33	Totally damaged.		
		Pea ..	0 6 0	..	·17	0 23 0	46	
		Potato ..	3 20 0	..	·33	20 0 0	1,620	
		Tobacco (Motihari) ..	½ tola	..	·17	2 0 0	164	
		Napier grass ..	2 0 0	..	·17	Not yet harvested.		

N. B.—Outturn of crops is very unsatisfactory due to drought.

The results of cultivation in the Demonstration Centres of Malda district during the year 1940-41.

Total number of Demonstration Centres in the district.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.				Total area in acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
			From Government farm.		By purchase.					
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif.								
18	1,100	Dharial *aus* paddy ..	78 0 0	6,240	....		78·00	967 33 0	77,426	Crop partially failed for want of rain.
		Indrasail *aman* paddy ..	19 0 0	1,520	....		50·66	256 39 0	20,558	
		Dudsar *aman* paddy ..	17 0 0	1,360	....		45·33	204 36 0	16,392	
		Joar (fodder) ..	....		6 0 0	480	10·00	2,174 0 0	173,920	Green fodder.
		Cowpea ..	....		15 0 0		25·00	Ploughed down.		
		Rabi.								
		Mustard (Tori No. 7) ..	1 14 0	94	....		12·00	32 24 0	2,608	
		Lentil No. 5 ..	5 16 0	432	....		12·00	69 5 0	5,530	
		Wheat P. 52 ..	6 30 0	540	....		6·00	47 0 0	3,760	Crop partially damaged due to drought.
		Motihari tobacco seeds ..	36 tolas		....		12·00	80 0 0	6,400	
		Patna white peas ..	....		2 10 0	180	6·00	25 11 0	2,022	Ditto.
		Sabour gram ..	6 12 0	504	....		12·00	85 32 0	6,864	
		Potato (Rangoon) ..	....		11 0 0	880	1·16	214 24 0	17,168	Crop partially failed due to drought.
		Oats	....		3 24 0	288	6·00	Fed to cattle.		
		Peas	....		2 28 0	216				
		Cauliflower .. .. / Cabbage .. .. / Tomato	....		360 pkts.		3·00	Rs. 600 worth produce		

		Kharif.								
Agricultural Demonstrator, Malda Sadar—3.	256	Dharial *aus* paddy ..	6 0 0	248	....		6	55 25 0	4,450	Partly damaged due to prolonged drought.
		Indrasail *aman* paddy ..	4 0 0	320	....		10·66	54 9 0	4,338	
		Dudsar *aman* paddy ..	5 0 0	400	....		13·33	65 16 0	5,232	
		Cowpea	3 0 0	240	....		5·00	....		Green manured.
		Joar fodder ..	....		1 8 0	96	2·00	301 25 0	25,130	Green weight.
		Napier grass ..	12 0 0	960	....		1·00	300 0 0	24,000	Ditto.
		Rabi.								
		Sabour gram ..	1 2 0	84	....		2·00	20 0 0	1,600	
		Mustard (Tori No. 7) ..	0 9 0	18	....		2·00	2 20 0	200	Partially damaged due to drought.
		Lentil No. 5 ..	0 36 0	72	....		2·00	10 0 0	800	
		Wheat P. 52 ..	1 5 0	90	....		1·00	6 0 0	480	
		Patna white peas ..	....		0 15 0	30	1·00	7 0 0	560	
		Motihari tobacco ..	6 tolas		....		2·00	10 20 0	840	
		Oats for fodder ..	....		0 24 0	48	..	....		
		Peas for fodder ..	....		0 18 0	36	1·00	90 0 0	7,200	Partially damaged due to drought.
		Potato (Rangoon variety)	....		1 35 0	150	0·28	20 0 0	1,600	
		Cauliflower ..	....		60 pkts.		0·50	Rs. 80 worth produce.		
		Cabbage								
		Tomato								
		Kharif.								
Agricultural Demonstrator, Iho—3.	269	Dharial *aus* paddy ..	6 0 0	480	....		6·00	85 8 0		
		Joar for fodder ..	....		1 8 0	96	2·00	636 0 0	50,880	
		Cowpea for green manuring	....		3 0 0	240	5·00	Green manured.		
		Indrasail *aman* paddy ..	5 0 0	400	....		13·33	97 30 0	7,820	
		Dudsar *aman* paddy ..	4 0 0	320	....		10·66	100 0 0	8,000	

Total number of Demonstration Centres in the district.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.		Quantity of seed supplied. By purchase.		Total area in acres sown under crop.	Total outturn of each crop.		Remarks (cause of failure and damage etc.).
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr ch.	lbs.	
		Rabi.								
		Mustard (Tori No. 7) ..	0 9 0	18	....		2·00	11 34 0	948	
		Pusa wheat 52 ..	1 5 0	90	....		1·00	4 20 0	360	
		Sabour gram ..	1 2 0	84	....		2·00	11 12 0	904	
		Lentil No. 5 ..	0 36 0	72	....		2·00	8 5 0	650	
		White Patna peas ..	....		0 15 0	30	1·00	2 11 0	182	
		Tobacco (Motihari) ..	6 tolas		....		2·00	10 9 0	818	
		Cauliflower .. } Cabbage .. } Tomato .. .. }	....		60 pkts.		1·25	Rs. 189 worth produce.		
		Potato (Rangoon variety)	....		1 0 0	80	·12	4 24 0	368	
		Oats for fodder .. } Peas for fodder .. }	.... /		0 24 0 / 0 18 0	48 / 36	1·00	100 0 0	8,000	
		Kharif.								
Agricultural Demonstrator, Chapainawabganj—3.	250	Dharial *aus* paddy ..	30 0 0	2,400	....		30·00	476 10 0	39,100	No *aman* paddy grown in this tract.
		Cowpea	....		3 0 0	240	5·00	..	..	Green manured.
		Joar for fodder ..	....		1 8 0	96	2·00	820 0 0	65,600	
		Napier grass ..	12 0 0	960	....		1·00	315 0 0	25,200	Green weight.
		Rabi.								
		Gram	1 2 0	84	....		2·00	20 0 0	1,600	
		Mustard Tori No. 7 ..	0 9 0	18	....		2·00	10 0 0	800	
		Wheat P. 52 ..	1 20 0	120	....		1·00	20 0 0	1,600	

		Motihari tobacco ..	6 tolas		....		2·00	18 0 0	1,440	
		Lentil No. 5 ..	0 36 0	72	0 15 0	30	1·00	6 0 0	480	
		White Patna peas ..	....		0 24 0	48	1·00	90 0 0	7,200	
		Oats for fodder ..	....		0 18 0	36				
		Peas for fodder ..	....		3 0 0	240	·33	50 0 0	4,000	
		Potato (Rangoon variety)	....							
		Cauliflower ..	....		60 pkts.		0·49	Rs. 100 worth produce.		
		Cabbage								
		Tomato								
		Kharif.								
	255	Indrasail *aman* paddy ..	5 0 0	400	....		10·66	80 0 0	6,400	No *kharif* crop except *aman* paddy was grown in this circle as it was started late of the season.
Agricultural Demonstrator, Chanchal—3.		Dudsar *aman* paddy ..	4 0 0	320	....		13·33	50 0 0	4,000	
		Napier grass ..	12 0 0	960	....		1·00	....		
		Rabi.								
		Potato (Rangoon variety)	....		3 0 0	240	1·00	40 0 0	3,200	
		Sabour gram ..	1 2 0	84	....		2·00	20 0 0	1,600	
		Lentil No. 5 ..	0 36 0	72	....		2·00	12 0 0	960	
		White Patna peas ..	....		0 15 0	30	1·00	8 0 0	640	
		Wheat P. 52 ..	1 5 0	90	....		1·00	....		Damaged.
		Mustard Tori No. 7 ..	0 9 0	18	....		2·00	4 20 0	360	
		Tobacco seeds ..	6 tolas		....		2·00	11 0 0	880	
		Cabbage	....		60 pkts.		·66	Rs. 120 worth produce.		
		Cauliflower								
		Tomato								

The Results of Demonstration Centres of the district of Malda for the year 1940-41.

Total number of Demonstration Centres in the district.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.		Quantity of seed supplied. By purchase.		Total area in acres sown under crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif.								
Agricultural Demonstrator, Kansat—3.	289	Dharial *aus* ..	30 0 0	2,400	....		30·00	264 15 0	21,150	No *aman* paddy grown in this circle.
		Joar for bodder ..	....		1 8 0	96	2·00	417 0 0	33,360	
		Cowpea (G. M.) ..	....		3 0 0	240	5·00	....		Green manured.
		Rabi.								
		Mustard Tori No. 7 ..	0 9 0	18	....		2·00	1 10 0	100	
		Patna white peas ..	....		0 15 0	30	1·00	....		Damaged.
		Oat and Peas—Fodder ..	....		0 24 0 0 18 0	48 36	1·00	20 0 0	1,600	
		Lentil No. 5 ..	0 36 0	72	....		2·00	....		Not harvested.
		Wheat P. 52 ..	1 5 0	90	....		1·00	....		Ditto.
		Sabour gram ..	1 0 0	80	....		2·00	....		Ditto.
		Potato (Rangoon) ..	....		3 0 0	240	0·33	30 0 0	2,400	Ditto.
		Motihari tobacco ..	6 tolas		....		2·00	....		
		English vegetables ..	....		60 packets.		0·49	Rs. 120 worth produce.		

24	Agricultural Demonstrator, Harishchandrapur.	262	*Kharif.*								
			Dharial *aus* ..	6 0 0	480	....		6·00	87 0 0	6,960	
			Joar fodder ..	....		1 8 0	96	2·00	1,050 0 0	84,000	
			Dudsar *aman* ..	5 0 0	400	....		10·66	13 0 0	7,440	Partly failed for want of rain.
			Indrasail *aman* ..	4 0 0	320	....		13·33	90 0 0	7,200	Ditto.
			Napier grass ..	12 0 0	960	3 0 0	240	5·00	320 0 0	25,600	
			Rabi.								
			Sabour gram	1 2 0	84	....		2·00	19 0 0	1,520	
			Mustard Tori No. 7 ..	0 9 0	18	....		2·00	3 0 0	240	
			Lentil No. 5	0 36 0	72	....		2·00	12 0 0	960	
			Wheat P. 52	1 5 0	90	....		1·00	7 0 0	560	
			Mtihari tobacco ..	6 tolas.		....		2·00	12 0 0	960	
			White Patna peas ..	....		0 15 0	30	1·00	6 20 0	520	
			Potato (Rangoon) ..	....		1 0 0	80	0·10	15 0 0	1,200	
			Cauliflower	....		60 packets.		0·50	Rs. 85 worth produce		
			Cabbage								
			Tomato								
			Oats and Peas for fodder	....		0 24 0	48	1·00	93 0 0	7,440	
						0 18 0	36				

The results of the cultivation in the Union Board Farms of Malda district during the year 1940-41.

Name of district.	Total number of Union Board farms.	Name of crop.	Quantity of seed supplied. From Government farm.		Quantity of seed supplied. By purchase.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
		Kharif.	Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
Malda ..	6	Dharial *aus* paddy	Seeds supplied by owner of these farms from previous year's crop.				11·00	209 10 0	17,540	1 acre of Dharial *aus* at Chanchal Union Board.
		Indrasail *aman* paddy ..					16·00	202 30 0	16,220	Farm not sown as it was started late in the season.
		Dudsar *aman* paddy ..					16·00	168 35 0	13,510	
		Jute (C. G.)	0 7 8	15	....		1·66	19 5 0	1,530	Crop partially failed for want of sufficient rain.
		Joar (fodder)	....		1 0 0	80	1·66	420 0 0	33,600	
		Cowpea, G. M. ..	....		1 10 0	100	1·66	Ploughed for G. M.		
		Rabi.								
		Sabour gram	1 2 0	84	....		2·00	10 0 0	800	Crop damaged due to continued drought.
		Mustard Tori No. 7 ..	0 9 0	18	....		2·00	7 10 0	570	Ditto.
		Wheat P. 52	2 10 0	170	....		2·00	8 15 0	670	Ditto.
		Lentil No. 5	0 36 0	72	....		2·00	9 35 0	790	Ditto.
		Linseed 18B.	0 36 0	72	....		2·00	4 25 0	470	Ditto.
		Motihari tobacco ..	6 tolas.		....		1·00	8 12 0	184	Ditto.
		Potato (Rangoon) ..	....		5 0 0	400	·66	46 0 0	3,680	Crop failed due to unfavourable weather.
		Cauliflower .. .. Cabbage .. .. Tomato	....		120 packets.		1·00	Rs. 153-12 worth produce.		
		Oats and Peas ..	....		1 8 0 0 36 0	.. ..	2·00	Green fodder fed to cattle.		

The results of cultivation in the Union Board Farms of Malda district during the year 1940-41.

Name of each Union Board farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Government farm.		By purchase.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif.								
Agricultural Demonstrator, Malda Sadar/Lakhipur Union Board Farm.	Maulvi Latif Hossain, B.A.	Dharial *aus* paddy ..	Seed supplied by owner from the last year's crop.				3·00	80 0 0	6,400	
		Jute C. G. ..	0 1 8	3	....		·33	4 25 0	370	
		Joar (fodder) ..	....		0 8 0	16	·33	60 0 0	4,800	Green weight.
		Napier grass ..	4 0 0	320	....		·33	85 0 0	6,800	Ditto.
		Cowpea ..	....		0 10 0	20	·33	....		Green manured.
		Rabi.								
		Sabour gram ..	0 7 0	14	....		·33	2 0 0	160	
		Mustard tori No. 7 ..	0 1 8	3	....		·33	1 0 0	80	
		Wheat P. 52 ..	0 15 0	30	....		·33	2 20 0	200	
		Lentil No. 5	0 6 0	12	....		·33	2 0 0	160	
		Linseed 18B ..	0 6 0	12	....		·33	0 25 0	50	
		Motihari tobacco ..	½ tola.		....		·16	1 20 0	120	
		White Patna peas ..	....		0 5 0	10	·33	1 20 0	120	
		Potato (Rangoon variety).	....		0 5 0	10	·05	4 0 0	320	
		Cauliflower .. / Cabbage .. / Tomato ..	....		20 pkts.		·16	Rs. 25 worth produce.		
		Oats and Peas—fodder	.... /		0 8 0 / 0 6 0	16 / 12	·33	....		Crop damaged by continued drought and insects. Joar fodder and *aus* paddy not grown in this farm as it was started late.

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied.				Total area in acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
			From Government farm.		By purchase.					
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif.								
Agricultural Demonstrator, Chanchal (Jute Committee)—Chanchal Union Board Farm.	Babu Banamali Podder.	Dudsar ..	1 0 0	80	....		·66	5 0 0	400	10 bighas could not be transplanted for want of sufficient rain.
		Indrasail *aman* ..	1 0 0	80	....		1·33	8 0 0	640	
		Napier grass ..	4 0 0	320	....		0·33	75 0 0	6,000	
		Rabi.								
		Sabour gram ..	0 7 0	14	....		0·33	3 0 0	240	
		Mustard tori No. 7 ..	0 1 8	3	....		·33	2 10 0	180	
		Wheat P. 52 ..	0 15 0	30	....		·33	....	..	Crop failed for want of moisture.
		Lentil No. 5 ..	0 6 0	12	....		·33	2 5 0	170	
		Linseed 18B ..	0 6 0	12	....		·33	0 10 0	20	Crop failed for want of moisture.
		Motihari tobacco ..	½ tola.		....		·08	0 25 0	50	
		White Patna peas ..	....		0 5 0	10	·33	0 20 0	40	Crop failed for want of moisture
		Potato (Rangoon variety).	....		1 0 0	80	·08	15 0 0	1,200	
		Cauliflower .. Cabbage .. Tomato ..	....		20 pkts.		·16	Rs. 18-12 worth produce.		
		Oats and Peas—fodder	....		0 8 0 / 0 6 0	16 / 12	·33	40 0 0	3,200	

		Kharif.								
Agricultural Demonstrator, Iho/Iho Union Board Farm.	Maulvi Hossain Emarat Chowdhury.	Dharial *aus* paddy ..	Seed supplied by the owner from last year's crop.				1·00	20 10 0	1,620	
		Indrasail *aman* ..	Ditto.				5·33	46 0 0	4,480	Partly damaged for want of sufficient rain.
		Jute C. G. ..	0 1 8	3	....		0·33	4 30 0	380	
		Joar for fodder ..	....		0 8 0	16	0·33	130 0 0	10,400	
		Cowpea (G. M.) ..	....		0 10 0	20	0·33	....		Green manured.
		Napier grass (fodder)	4 0 0	320	....		0·33	120 0 0	9,600	
		Rabi.								
		Sabour gram ..	0 7 0	14	....		0·33	2 15 0	190	
		Mustard tori No. 7 ..	0 1 0	3	....		0·33	1 20 0	120	
		Wheat P. 52 ..	0 15 0	30	....		0·33	2 5 0	170	
		Lentil No. 5 ..	0 6 0	12	....		0·33	1 30 0	140	
		Linseed 18 B ..	0 6 0	12	....		0·33	2 10 0	180	
		Motihari tobacco ..	½ tola.		....		0·10	2 12 0	184	
		Potato (Rangoon variety).	....		1 0 0	80	0·10	7 20 0	600	
		Cauliflower ..	....		20 pkts.		·16	Rs. 30 worth produce.		
		Cabbage ..								
		Tomato ..								
		Oats and Peas—fodder	....		0 8 0	16	·33	30 0 0	2,400	
			....		0 6 0	12				

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied.				Total acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
			From Government farm.		By purchase.					
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif.								
Agricultural Demonstrator, Chapainwabganj; Chaklampur Union Board Farm.	Maulvi Afzal Haque.	Dharial *aus* ..	3 0 0	240	....	..	3·00	58 20 0	4,680	*Aman* paddy not grown as this farm is in *aus* tract.
		Jute	0 1 8	3	....		·33	5 20 0	440	
		Joar (for fodder) ..	4 0 0		0 8 0	..	·33	125 0 0	10,000	
		Napier grass (fodder)	..	320	....		·33	120 0 0	9,600	
		Cowpea	..		0 10 0	20	·33	....		Green manured.
		Rabi.								
		Sabour gram ..	0 7 0	14	....		·33	3 0 0	240	
		Mustard (tori No. 7)	0 1 8	3	....		·33	0 20 0	40	Crop partially damaged for want of sufficient moisture.
		Wheat P. 52 ..	0 15 0	30	....		·33	1 0 0	80	
		Lentil No. 5 ..	0 6 0	12	....		·33	4 0 0	320	Ditto.
		Linseed 18B. ..	0 6 0	12	....		·33	0 20 0	40	Ditto.
		Motihari Tobacco ..	½ tola		....		·16	0 15 0	30	Ditto.
		White Patna peas ..	....		0 5 0	10	·33	2 8 0	176	Ditto.
		Potato (Rangoon variety)	....		1 0 0	80	·12	10 0 0	800	Ditto.
		Cauliflower ..	....		....		..	....		....
		Cabbage ..	....		....		..	....		....
		Tomato	....		20 pkts.		·16	Rs. 40 worth produce.		
		Oats and peas (fodder)	....		0 8 0 0 6 0	16 12	·33	40 0 0	3,200	

Agricultural Demonstrator, Kansat/ Kansat Union Board Farm.	Maharaj Kumar A. K. Acherjya Bahadur.	*Kharif.*								
		Dharial *aus* paddy ..	Seed supplied by owner from last year's crop.				3·00	45 0 0	3,600	*Aman* paddy n… grown as this farm is in *aus* tract.
		Jute (C & G.) ..	0 1 8	3	....		0·33	4 5 0	350	
		Joar (fodder) ..	....		0 8 0	16	0·33	65 0 0	5,200	
		Cowpea (green manuring).	....		0 10 0	20	·033	....	..	Green manured.
		Napier grass ..	4 0 0	320	....		0·33	50 0 0	4,000	
		Rabi.								
		Sabour gram ..	0 7 0	14	....		0·33	....	..	Crop died due to long drought.
		Mustard (tori No. 7)	0 1 8	3	....		0·33	0 15 0	30	Not harvested.
		Wheat P. 52 ..	0 15 0	30	....		0·33	....	..	Crop died due to drought.
		Lentil No. 5 ..	0 6 0	12	....		0·33	....		
		Linseed 18B. ..	0 6 0	12	....		0·33	....	..	Not harvested.
		Motihari tobacco ..	½ tola		....		0·16	....	..	Ditto.
		White Patna peas ..	....		0 5 0	10	0·33	....	..	Died due to drought.
		Patato (Rangoon variety).	....		1 0 0	80	0·10	7 0 0	560	Damaged by insects, etc., and hares.
		Cauliflower Cabbage Tomato	....		20 pkts.		0·16	....		
		Oats and *Kharif* Peas	....		0 8 0 0 6 0	16 12	0·33	10 0 0	800	

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied.				Total area in acres sown under each crop.	Total on each crop.		Remarks (cause of failure and damage, etc.).
			From Government farm.		By purchase.					
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
Agricultural Demonstrator, Harish-Chandrapur/Harishchandrapur Union Board Farm.	Babu Sudhir Chandra Roy.	Dharial *aus* paddy ..	Seeds supplied by the owner from last year's crop.				1·00	10 0 0	800	-
		Jute (C. G.) ..	0 1 8	33	....		·33	2 0 0	200	
		Joar (fodder) ..	....		0 8 0	16	·33	125 0 0	10,000	
		Cowpea (G. M.) ..	....		0 10 0	20	·33	....		
		Napier grass ..	4 0 0	320	....		·33	200 0 0	8,000	
		Rabi.								
		Sabour gram ..	0 7 0	14	....	..	·33	2 25 0	210	
		Mustard (tori No. 7)	0 1 8	3	....	..	·33	....		Crop failed due to drought.
		Wheat P. 52 ..	0 15 0	30	....	..	·33	1 20 0	120	
		Lentil No. 5 ..	0 6 0	12	....	..	·33	0 20 0	40	
		Linseed 18B. ..	0 6 0	12	....	..	·33	1 30 0	140	
		Motihari tobacco ..	½ tola		....	..	·16	1 20 0	120	
		White Patna peas ..	....		0 5 0	10	·33	1 20 0	120	
		Potato (Rangoon) ..	....		1 0 0	80	·10	15 0 0	1,200	
		Cauliflower, Cabbage, Tomato	....		20 pkts.	..	·16	Rs. 40 worth produced.		
		Oats and } Fodder	....		0 8 0	..	·33	30 0 0	2,400	
		Peas } Fodder	....		0 6 0	..				
		Indrasall *aman* paddy. Dudsar *aman* paddy.	Seed supplied by the owner.				5·33	60 0 0	4,800	Partially damaged by drought.

The results of cultivation in the Demonstration Centres of Jalpaiguri district during the year 1940-41.

Total number of Demonstration Centres in the district.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.		By purchase.		Total area in acres sown under crop.	Total outturn of each crop		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif.								
15	90	Dharial *aus* ..	30 0 0	2,460	....	..	30·00	609 14 0	49,966	
15	120	Maize (fodder) ..	11 10 0	922	....	..	10·00	2,390 0 0	1,95,980	
27	108	Napier grass	108 0 0	8,856	....	..	9·00	2,310 0 0	189,420	Outturn of 5·00 acres 4·00 being new plantation.
		Rabi.								
15	180	Dudsar and Latisail *aman* paddy.	45 0 0	3,690	....	..	120·00	2,686 0 0	220,252	
27	108	Mustard (tori No. 7) ..	4 2 0	332	....	..	36·00	155 23 0	12,757	
27	108	Wheat P. 52	20 10 0	1,660	....	..	18·00	168 22 0	13,666	
27	108	Motihari tobacco ..	54 tolas.	..	....	..	18·00	202 4 0	16,572	
27	54	Potato (Darjeeling) ..	....	..	27 0 0	..	2·70	417 34 0	34,194	
27	108	Cabbage, cauliflower, and tomato.	....	..	162, pkts. 216, pkts. and 162 pkts.	..	4·50	1,221 5 0	..	·5 failure.
27	108	Oats and peas (fodder) ..	....		10 32 0 4 30 0	885 389	18·00	1,863 15 0	152,796	

The results of cultivation in the Union Board of the Jalpaiguri district during the year 1940-41.

Name of district.	Total number of Union Board Farm.	Name of crop.	Quantity of seed supplied. From Government Farm.		Quantity of seed supplied. By purchase.		Total area in acres sown under crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif.								
Jalpaiguri ..	5	Dharial *aus* paddy ..	....		5 0 0	410	5·00	122 25 0	10,055	
	5	D. 154 jute	....		0 7 8	15	1·66	34 27 0	2,843	
	5	Maize fodder	1 10 0	102	....		1·66	402 0 0	32,964	
	9	Napier grass	36 0 0	2,952	....		3·00	1,230 0 0	100,860	1·33 being new plantation.
		Rabi.								
	5	Dudsar and Lalisail *aman* paddy.	....		10 0 0	820	26·66	683 30 0	56,067	
	9	Mustard Tori No. 7 ..	0 27 0	55	....		6·00	26 3 0	2,138	1·66 failure being drought.
	9	Wheat P. 52 ..	3 15 0	276	....		3·00	26 12 0	2,156	·66 damaged by cattle.
	9	Motihari tobacco ..	4½ tola ..	..	....		1·50	17 37 0	1,470	165 failure for the negligence of farmer.
	9	Potato (Darjeeling) ..	....	..	19 0 0	1,558	1·83	242 7 0	19,858	
	9	Cabbage, cauliflower and tomato.	....	..	54 pkts., 72 pkts. and 54 pkts.		1·50	Rs. 229	..	·05 failure for above reason.
	9	Oats and Peas (fodder) ..	....	.. / ..	1 32 0 / 1 5 0	148 / 92	3·00	272 0 0	2,234	·33 failure for drought.

Results of cultivation in the Union Board Farm of the Jalpaiguri district during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks.
			From Government farm.	By purchase or owner's.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Mandalghat (Jalpaiguri).	Maulvi Issamuddin Prodhan.	D. 154 jute ..	..	0 1 8	·33	9 10 0	758	
		Dharial *aus* ..	..	.. 1 0 0 (owner).	1·00	30 5 0	2,470	
		Maize fodder ..	0 10 0	..	·33	85 0 0	6,970	
		Dhaincha G. M ..	..	0 14 0	1·17	..	..	Ploughed down.
		Dudsar *aman* ..	..	2 0 0 (owner).	5·33	169 30 0	13,919	
		English vegetables ..	..	20 pkts.	·165	Rs. 50	..	
		Darjeeling potato ..	..	1 0 0	·10	15 10 0	1,250	
		Matihari tobacco ..	½ tola	..	·165	2 15 0	194	
		Wheat, pusa No 52 ..	0 15 0	0 8 0	·33	5 20 0	451	
		Oats and peas ..	..	{ 0 8 0 0 5 0 }	·33	55 0 0	4,510	
		Mustard tori No. 7 ..	0 3 0	..	·66	5 10 0	430	
		Napier grass ..	..	..	·165	150 0 0	12,300	
		Silage ..	..	..	..	80 0 0	6,560	1 No.
		A. F. Y. M. heaps ..	..	..	..	3,840 0 0	314,880	16 Nos.
		Water-hyacinth ..	..	..	..	50 0 0	4,100	2 ,,

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks.
			From Government farm.	By purchase or owner's.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.	lbs.	Md. sr. ch.	lbs.	
Tikatuli ..	Maulvi Karamutulla	Dharial *aus* ..	..	1 0 0 (owner).	1·00	26 0 0	2,132	
		D. 154 jute ..	..	0 1 0	·33	8 10 0	676	
		Maize fodder ..	0 10 0	..	·33	85 0 0	6,970	
		Dhaincha, G. M. ..	..	0 14 0	1·17	..	..	Ploughed down.
		Latisail *aman* ..	..	1 0 0 (owner).	2·66	60 0 0	4,920	
		Dudsar *aman* ..	..	1 0 0 (owner).	2·66	70 0 0	5,740	
		Napier grass ..	..	..	·165	100 0 0	8,200	
		English vegetables ..	..	20 pkts.	·165	Rs. 50	..	
		Wheat ..	0 15 0	..	·33	2 10 0	184	
		Mathari tobacco ..	½ tola	..	·165	2 30 0	225	
		Mustard tori No. 7 ..	0 3 0	..	·65	4 0 0	328	
		Oats and peas ..	..	{ 0 8 0 / 0 5 0 }	·33	55 0 0	4,510	
		Potato ..	..	1 0 0	·10	16 0 0	1,312	
		Silage	..	..	..	340 0 0	3,280	1 No.
		A. F. Y. M. heaps	..	..	..	300 0 0	24,600	12 Nos.
		Water-hyacinth ..	..	..	..	40 0 0	3,280	2 "

		Water-hyacinth ..	..	..	..	40 0 0	[illegible]	
Haripur-Maidandighi (Panchagarh).	Maulvi Darajuddin Ahmed.	Maize ..	0 10 0	..	·33	120 0 0	9,600	
		Dhaincha G. M. ..	..	0 14 0	1·17	..	..	Ploughed down.
		Dharal *aus* ..	..	1 0 0 (owner).	1·00	26 0 0	2,080	
		Aman, Dudsar ..	..	1 0 0 (owner).	2·66	80 0 0	6,400	
		Napier grass ..	..	..	·66	800 0 0	64,000	
		Darjeeling potato ..	..	1 0 0	·10	1,426 0 0	1,191	
		Wheat ..	0 15 0	..	·33	4 0 0	320	
		Mustard tori No 7 ..	0 3 0	..	·66	5 0 0	410	
		Oats and peas ..	..	{ 0 8 0 / 0 5 0 }	·33	50 0 0	4,100	
		Matihari tobacco ..	½ tola	..	·165	2 30 0	220	
		English vegegables ..	..	20 pkts.	·165	Rs. 40	..	
		D. 154 jute ..	..	0 1 8	·33	7 0 0	574	
		A. F. Y. M. heaps ..	..	..	..	60 0 0	4,800	4 Nos.
		Silage ..	..	..	..	75 0 0	6,000	1 No.
		Latisail *aman* ..	..	1 0 0 (owner).	2·66	76 0 0	6,160	
Jagatber (Patgram)	Babu Upendra Ch. Aswar.	Dharial *aus* ..	..	1 0 0 (owner).	1·00	16 20 0	1,312	
		D. 154 jute ..	..	0 1 8	·33	6 20 0	532	
		Maize fodder ..	0 10 0	..	·33	50 0 0	4,100	
		Dudsar *aman* ..	..	1 0 0 (owner).	2·66	56 0 0	4,592	
		Latisail *aman* ..	..	1 0 0 (owner).	2·66	60 0 0	4,920	
		Dhaincha, G. M. ..	..	0 14 0	1·17	..	..	Ploughed down.
		Oats and peas ..	..	{ 0 8 0 / 0 5 0 }	·33	25 0 0	2,050	
		English vegetables ..	..	20 pkts.	·165	Rs. 32	..	
		Wheat pusa No. 52 ..	0 15 0	..	·33	3 10 0	266	
		Darjeeling potato ..	..	1 0 0	·10	15 0 0	1,430	
		Mustard tori No. 7 ..	0 3 0	..	·66	3 20 0	286	
		A. F. Y. M. heaps ..	..	..	..	56 0 0	4,592	4 Nos.

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks.
			From Government farm.	By purchase or owner's.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.	lbs.	Md. sr. ch.	lbs.	
Chengpara (Alipurduars).	Babu Rajendra Ch. Sarker.	Silage ..	..	..	..	40 0 0	3,240	1 No.
		Matihari tobacco ..	½ tola	..	·165	2 5 0	174	
		Napier grass ..	..	..	·33	180 0 0	14,760	
		Dharial ..	..	1 0 0 (owner).	1·00	24 0 0	1,968	
		D. 154 jute ..	..	0 1 8	·33	3 27 0	301	
		Maize fodder ..	0 10 0	..	·33	62 0 0	5,084	
		Dudsar *aman* ..	..	1 0 0 (owner).	2·66	58 0 0	4,756	
		Latisail *aman* ..	..	1 0 0 (owner).	2·66	54 0 0	3,488	
		Dhaincha, G. M. ..	..	0 14 0	1·17	..	..	Ploughed down.
		Oats and peas ..	..	{ 0 8 0 / 0 5 0 }	·33	20 0 0	1,640	
		Wheat pusa No. 52 ..	0 15 0	..	·33	2 35 0	215	
		Darjeeling potato ..	..	1 0 0	·10	14 9 0	1,187	
		Mustard tori No. 7 ..	0 3 0	..	·66	3 25 0	297	
		Matihari tobacco ..	½ tola	..	·165	1 35 0	154	
		Silage ..	..	..	..	..	..	
		Napier grass ..	..	..	..	..	..	
		English vegetables ..	..	20 pkts.	·165	Rs. 10	..	
		A. F. Y. M. heaps ..	..	..	..	50 0 0	4,100	3 Nos.
Pamuli (Dabigung) ..	Maulvi Delwar Hossain.	Darjeeling potato ..	..	3 20 0	·33	34 16 0	2,840	Other crops failure due to negligence of farmer.

Pamuli (Dabigung) ..	Maulvi Hossain.	Belwai						
Kismat Sukani (Rajgunge).	*Md. Ismail Hossain* ..	*Darjeeling potato* ..	..	3 20 0	·33	42 12 8	3,469	
		Mustard tori No. 7 ..	0 3 0	..	·66	0 38 0	78	For drought less outturn damaged by cattle and for want of rain failure.
		Wheat pusa No. 52	0 15 0	..	·33	..	..	
		Oats and peas ..	..	{ 0 8 0 / 0 5 0 }	·33	25 0 0	2,050	
		Matihari tobacco ..	1½ tola	..	·165	2 15 0	194	
		English vegetables ..	..	20 pkts.	·165	..	..	Failure.
		A. F. Y. M. heaps ..	..	..	..	60 0 0	4,920	3 Nos.
Mahakalguri (Samuktola).	Md. Sadaruddin Ahmed	Potato	..	3 20 0	·33	41 10 0	3,382	Failure due to drought.
		Mustard tori No. 7	0 3 0	..	·66	..	..	
		Wheat pusa No. 52 ..	0 15 0	..	·33	4 17 0	362	
		Oats and peas ..	..	{ 0 8 0 / 0 5 0 }	·33	27 0 0	2,214	
		Matihar tobacco ..	½ tola	..	·165	2 7 0	178	
		English vegetables ..	..	20 pkts.	1·65	..	..	Failure.
		A. F. Y. M. heaps ..	..	..	..	25 0 0	2,050	1 No.
Uttar Gosair Hat (Dhupguri).	Babu Rajamohan Roy.	Darjeelng potato ..	..	3 20 0	·33	49 0 0	4,018	
		Mustard tori No. 7 ..	0 3 0	..	·66	3 30 0	307	
		Wheat pusa No. 52 ..	0 15 0	..	·33	4 0 0	328	
		Oats and peas ..	..	{ 0 8 0 / 0 5 0 }	·33	15 0 0	1,230	
		Matihari tobacco ..	½ tola	..	·165	1 20 0	123	
		A. F. Y. M. heaps ..	..	..	..	45 0 0	3,690	3 Nos.
		English vegetables ..	..	20 pkts.	·165	Rs. 50	..	

Results of cultivation of the Union Board Farm under the Sadar Circuits during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied.— From Government Farm.	Quantity of seed supplied.— By purchase.	Total area in acres under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Katapara ..	Ramanath Das ..	*Aus* paddy ..	Seeds supplied	by the owner	1·00	20 0 0	1,640	
		Aman paddy ..	Ditto	..	5·33	136 0 0	11,152	Low outturn due to drought during the season.
		C. G. Jute ..	0 1 8	..	·33	10 0 0	820	
		Tori No. 7 ..	0 1 8	..	·33	1 20 0	123	
		Lentil No. 5 ..	0 6 0	..	·33	2 10 0	184	
		Rangoon potato ..	..	1 0 0	·10	15 0 0	1,230	
		Tobacco ..	½ tola	..	·17	1 20 0	123	
		Wheat Pusa 52 ..	0 15 0	..	·33	2 20 0	205	
		English vegetables—						
		(*a*) Cabbage ..	20 pkts.	..	·17	Rs. 70		
		(*b*) Cauliflower ..	..	..	..	..	..	
		(*c*) Tomats ..	20 pkts.	..	·17	..	..	
		Gram Sabour No. 4 ..	0 7 0	..	·33	1 30 0	143	
		Oats and peas ..	0 5 0	0 1 8	·17	24 0 0	1,968	
		Napier grass ..	..	..	·33	200 0 0	16,400	
		Dhaincha ..	..	0 30 0	1·00	Ploughed up.		
		Cowpea ..	..	0 10 0	·66	..	..	
		Maize for fodder ..	..	0 10 0	·33	75 0 0	6,150	

A. F. Y. manure heaps—12 heaps. 1,152 mds. 92,160 lbs.

A. F. Y. manure heaps—12 heaps. 1,152 mds. 92,160 lbs.

Results of cultivation of the Union Board Farm under Monmathapur Circuits during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Govern-farm.	Quantity of seed supplied. By purchase.	Total area in acres under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Manipore ..	Tamijuddin Sarkar ..	Surjamukhi ..	..	..	..	..	..	
		Aus paddy ..	1 0 0	..	1·00	13 25 0	1,117	
		C. G. jute ..	0 1 8	....	·33	10 20 0	861	
		Maize, G. F. ..	0 10 0	..	·33	49 20 0	4,059	
		Napier grass ..	4 0 0	..	·33	Damaged by cattle.		
		Dudsar *aman* paddy ..	2 0 0	..	5·33	150 10 0	12,320	
		Dhaincha for green manuring.	..	0 30 0	1·00	At the time of harvesting ploughed up.		
		Cowpea for green manuring.	..	0 10 0	·66	Ditto.		
		Rangpur potato ..	..	3 20 0	·33	27 30 0	2,276	
		Gram (S. 4) ..	0 7 0	..	·33	2 10 0	184	
		Lentil No. 5 ..	0 6 0	..	·33	2 35 0	236	
		Tori No. 7 ..	0 1 8	..	·33	1 15 0	112	
		Tobacco ..	½ tola	..	·17	1 30 0	143	
		Wheat P. 52 ..	0 15 0	..	·33	2 30 0	225	
		Oats and peas ..	..	0 6 8	·17	In early stage damaged by cattle and goats.		
		English vegetables—						
		(*a*) Cabbages ..	..	20 pkts.	·17	Damaged by goats and cattle.		
		(*b*) Cauliflower ..	..	..	..	..	..	
		(*c*) Tomato ..	..	..	..	..	..	
		A. F. Y. manure heaps	5 heaps	..	..	526 0 0	43,132	Out of 526 mds. about 400 applied to different crops.
		Water-hyacinth compost	0 1 0	..	..	120 0 0	9,840	120 mds. applied to the sugarcane plots.

Results of the cultivation of the Union Board Farm under the Raiganj Circuits, Dinajpur, during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Goalpara ..	Md. Afajuddin Ahmed	*Aus* paddy ..	..	..	1·00	3 39 0	326	Low outturn due to drought during the season.
		Aman paddy ..	..	..	5·33	56 0 0	4,480	Ditto.
		C. G. jute seed ..	0 1 8	..	·33	6 0 0	490	Ditto.
		Tori No. 7 ..	0 1 8	..	·33	1 20 0	123	Ditto.
		Lentil No. 5 ..	0 6 0	..	·33	1 20 0	123	Ditto.
		Rangoon potato ..	..	1 0 0	·10	7 0 0	574	Ditto.
		Tobacco ..	½ tola	..	·17	1 20 0	123	
		Wheat ..	0 15 0	..	·33	2 20 0	205	
		English vegetables ..	..	1½ oz.	·17	Rs. 31-4	..	
		Gram S. 4 ..	0 7 0	..	·33	1 10 0	102	
		Oats and peas ..	0 5 0	0 1 8	·17	20 0 0	1,640	
		Maize for fodder ..	0 10 0	..	·33	100 0 0	8,200	
		Napier grass ..	..	..	·33	75 0 0	6,150	
		Dhaincha ..	..	0 30 0	1·00	Ploughed up for *aman* paddy for *rabi* crop.		
		Cowpea ..	..	0 10 0	·66	..	..	
		A. F. Y. manure heaps	3 heaps	..	..	252 0 0	28,800	

Cowpea						
A. F. Y. manure heaps	3 heaps	..	..	252 0 0	28,800	

Results of the cultivation of the Union Board Farm under the Kalaganj Circuits during the year 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Bhandar ..	Babu Sarat Chandra Barman.	Dudsar *aman* paddy ..	2 0 0	..	5·33	112 0 0	9,184	
		Napier grass ..	4 0 0	..	·33	10 0 0	820	
		Rangoon potato ..	..	3 20 0	·33	65 10 0	5,330	
		Gram S. 4 ..	0 7 0	..	·33	4 30 0	389	
		Lentil No. 5 ..	0 6 0	..	·33	4 30 0	246	
		Tori No. 7 ..	0 1 8	..	·33	1 30 0	140	
		Tobacco ..	½ tola	..	·17	1 35 0	153	
		Wheat P. 52 ..	0 15 0	..	·33	..	..	Totally damaged by insects.
		Oats and peas for fodder	..	0 6 8	·17	35 0 0	2,870	
		English vegetables—		20 pkts.	·17	Rs. 120.		
		(*a*) Cabbage ..	..			..	..	
		(*b*) Cauliflower ..	..	..	..	..		
		(*c*) Tomato ..	..	..	..			
		Artificial farmyard manure heaps.	4 heaps	..	..	330 0 0	13,860	

Total results of 6 Union Board Farms of the Dinajpur during the year 1940-41.

Total number of Farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
6	Rama Nath Das, Tamijuddin Sarkar, Rai Sahib J. Saha, Sarat Chandra Barman, Hagru Sarkar, Afajuddin Ahmed.	Surjamukhi *aus* paddy ..	1 0 0	In new farm	·60	68 9 8	5,595	
		C. G. jute ..	0 7 8	..	1·66	42 27 8	3,500	
		Maize for fodder ..	1 10 0	..	1·66	399 20 0	32,759	
		Dudsar *aman* ..	4 0 0	In new farm	32·00	661 10 0	54,110	
		Napier grass ..	8 0 0	Ditto	2·00	305 0 0	25,010	·66 damaged by goats, etc.
		Oats and peas ..	0 15 0	0 24 0	1·00	90 0 0	7,380	·33 damaged by goats.
		Dhaincha for G. M. ..	..	3 30 0	5·00	..	..	Ploughed up at the time of harvesting and planted *aman*.
		Cowpea for G. M. ..	..	1 10 0	3·33	..	..	Ploughed up at the time of harvesting and sowing *rabi* crops.
		Rangoon potato ..	..	11 0 0	1·06	125 35 0	10,301	·11 damaged by goats.
		Gram S. 4 ..	1 2 0	..	2·00	15 30 0	1,289	
		Lentil No. 5 ..	0 36 0	..	2·00	13 7 0	1,079	Partially damaged by cattle.
		Tori No. 7 ..	0 7 0	..	2·00	9 37 0	788	
		Tobacco ..	3 tolas	..	1·00	10 25 0	869	
		Wheat 52 ..	2 10 0	..	2·00	12 30 0	1,045	
		English vegetables—						
		(*a*) Cabbage ..	..	120 pkts.	1·00	Rs. 318-12	..	·17 damaged by cattle, goats and hens.
		(*b*) Cauliflower ..	..	..	..	..	..	
		(*c*) Tomato ..	..	..	..	..	..	
		Artificial farmyard manure heaps.	32 heaps	..	..	3,288 0 0	269,616	

Results of the cultivation of the Demonstration Centres under the Sadar Circuits, Dinajpur, during the year 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area sown under each crop in acres.	Total outturn of each crop in both mds. and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
3	19	*Aus* paddy	6 0 0	..	6·00	127 9 0	10,432	
	34	*Aman* paddy	9 0 0	..	24·00	368 20 0	30,217	Low outturn due to drought during the season and 2 bighas not transplanted for want of rain.
	10	Tori No. 7	0 9 0	..	2·00	10 32 0	866	
	10	Patnai peas	0 21 0	..	1·00	5 9 8	429	Low outturn due to drought during the season.
	13	Rangoon potato	..	3 0 0	·300	30 0 0	2,400	Ditto.
	10	Lentil No. 5	0 36 0	..	2·00	13 33 8	1,135	Ditto.
	9	Gram Sabour No. 4 ..	1 2 0	..	2·00	4 33 0	395	
	7	Tobacco	6 tolas	..	2·00	13 10 0	1,066	
	9	Wheat	1 5 0	..	1·00	7 0 0	574	

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area sown under each cop in acres.	Total outturn of each crop in both mds. and lbs.		Remarks.
			From Government farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
	13	English vegetables—						
		(*a*) Cabbage ..						
		(*b*) Cauliflower ..	..	60 pkts.	·500	Rs. 188.		
		(*c*) Tomato ..						
	5	Oats and peas for fodder ..	0 30 0	0 9 0	1·00	123 0 0	10,086	
	13	Maize for fodder	1 20 0	..	2·00	424 20 0	35,629	
	7	Napier grass	12 0 0	..	1·00	160 0 0	13,020	Growth was not satisfactory due to drought during the season.
	12	Dhaincha for G. M. ..	..	2 10 0	3·00			Ploughed up for green manure for *aman* paddy.
	10	Cowpea	..	0 30 0	2·00			Ploughed up for *rabi* crops.

Artificial farmyard manure heaps—20 mds. heaps 1,260 mds.—100,800 lbs.
Water-hyacinth compost—7 hegs—906-20-0 for 72,520 lbs.
Silo—18 mds. for fodder (fed to cattle) for 6,400 lbs.

Silo—18 mds. for fodder (fed to cattle) for ...

Results of cultivation of the Demonstration Centres under the Monmathapur Circuits, Dinajpur, during the year 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area sown under each cop in acres.	Total outturn of each crop in both mds. and lbs.		Remarks.
			From Government farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
3	19	*Aus* paddy	6 0 0	..	6·00	67 13 8	5,521	·50 partially damaged by cattle and partially failed for want of moisture.
	8	Dhaincha for G. M. ..	..	2 10 0	3·00	....	..	Ploughed up.
	16	Cowpea	..	0 30 0	2·00	....		
	14	Maize for green fodder ..	1 20 0		2·00	456 5 0	37,402	·17 damaged by cattle.
	72	*Aman* paddy	9 20 0	..	24·00	368 7 0	49,867	1·33 was not planted for want of rain water in time, 2·46 failed for want of moisture.
	8	Napier grass	12 0 0	..	1·00	112 20 0	9,235	·17 damaged by cattle.
	8	Patnai peas, white ..	0 21 0	..	1·00	8 15 0	686	·30 failed for want of moisture and partially damaged by cattle.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area sown under each cop in acres.	Total outturn of each crop in both mds. and lbs.		Remarks.
			From Government farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
	7	Wheat	1 5 0	..	1·00	9 25 0	789	Plants died and damaged by insects.
	9	Oats and peas	..	0 39 0	1·00	122 10 0	10,024	·17 damaged by goats.
	11	Gram S. 4	1 2 0		2·00	7 14 0	602	·40 damaged by goats and insects and birds.
	9	Lentil No. 5	0 36 0	..	2·00	15 37 0	1,274	Ditto.
	11	Tori No. 7	0 9 0	..	2·00	8 12 0	680	
	12	Rangoon potato ..	..	3 0 0	·30	33 15 0	2,736	
	52	Tobacco	6 tolas	..	2·00	32 4 0	2,632	
	30	English vegetables— (*a*) Cabbage .. (*b*) Cauliflower .. (*c*) Tomato ..	..	60 pkts.	·50	Rs. 288-7.		
	54	Artificial farmyard manure heaps—62 heaps				7,357 0 0	603,274	
	10	Water-hyacinth compost—12 heaps				1,772 0 0	145,304	
	1	Shed over manure pit—1.						
	1	Silo	..	..	..	90 0 0	7,380	

Results of the cultivation of the Demonstration Centres under the Kaliaganj Circuits, Dinajpur, during the year 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
3	12	*Aman* paddy ..	9 0 0	..	24·00	305 5 0	24,999	12 bighas damaged in the seed bed due to drought.
	13	Tobacco	6 tolas	..	2·00	16 33 0	1,379	
	10	Gram S. 4	1 2 0	..	2·00	17 8 0	1,410	
	6	Peas Patnai	0 21 0	..	1·00	7 30 0	634	·17 failed for want of moisture in the land.
	7	Wheat 52	1 5 0	..	1·00	1 35 0	153	·83 failed for want of moisture and damaged by insects.
	9	Lentil No. 5	0 36 0	..	2·00	19 20 0	1,578	
	8	Rangoon potato	..	3 0 0	·30	31 5 0	2,552	
	6	Oats and peas	..	0 39 0	1·00	148 0 0	12,136	
	7	Tori No. 7	0 9 0	..	2·00	9 20 0	778	
	7	English vegetables— (*a*) Cabbage (*b*) Cauliflower (*c*) Tomato } ..	..	60 pkts.	·500	Rs. 249-12		1 cottah damaged by cattle.
	6	Napier grass	12 0 0	..	1·00	60 0 0	4,920	Green fodder.
	20	Artificial farmyard manure heaps—43 heaps		..	..	5,000 0 0	50,000	Applied to *rabi* crops.

No silo was prepared as the work of Jute Committee A. D. was started from *rabi* season.

Results of the cultivation of the Demonstration Centres under Ruhea Circuits during the year 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
3	21	*Aus* paddy	6 0 0	..	6·00	72 30 0	5,962	
	48	*Aman* paddy	9 0 0	..	24·00	390 24 0	32,438	
	33	Maize (fodder)	1 20 0	..	2·00	222 35 0	1,827	
	5	Napier grass	12 0 0	..	1·00	Damaged	..	Damaged by goats and cattle.
	12	Cowpea G. M.	..	0 30 0	2·00	....	..	Ploughed up in field for *rabi* crop.
	10	Dhaincha G. M.	..	2 10 0	3·00	....	..	Ploughed up in the field for *aman* paddy.
	16	Rangoon potato	..	3 0 0	·29	17 26 0	1,446	Low outturn for want of moisture.
	11	Gram S. 4	1 2 0	..	2·00	3 30 0	307	
	13	Lentil No. 5	0 36 0	..	2·00	2 30 0	224	Low outturn due to drought.
	6	Tori No. 7	0 9 0	..	2·00	5 13 0	436	

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6	*Peas, Patnai*	0 21 0	..	1·00	0 22 0	44	1 bigha 15 cottahs damaged by cattle.
7	Oats and peas	0 30 0	0 8 8	1·00	27 20 0	2,254	1 bigha 5 cottahs damaged by cattle and goats.
24	Tobacco	6 tolas	..	2·00	15 10 0	1,250	
28	English vegetables—						
	(*a*) Cabbage ..	..	60 pkts.	·50	Rs. 100		7 cottahs damaged by the cattle and goats.
	(*b*) Cauliflower ..						
	(c) Tomato ..						
17	Artificial farmyard manure heaps—	23 heaps	..	..	2,090 0 0	17,138	Applied in Lentil Tori and sugarcane, plots.
1	Silo	1 pit	..	..	40 20 0	3,320	Fodder fed to the cattle.

Result of the cultivation of the Demonstration Centres under the Raiganj Circuits, Dinajpur, during the year 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks.
			From Government Farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
3	18	*Aus* paddy	6 0 0	..	6·00	45 9 0	3,618	
	36	*Aman* paddy	9 0 0	..	24·00	26 35 0	2,204	4 bighas damaged due to drought during the season.
	12	Tori No. 7	0 9 0	..	2·00	6 20 0	538	
	11	Patnai peas	0 21 0	..	1·00	7 12 0	598	
	12	Rangoon potato	..	3 0 0	·300	18 17 0	1,510	Low outturn due to drought during the season.
	14	Lentil No. 3	0 36 0	..	2·00	6 35 8	565	Ditto.
	12	Gram S. 4	1 2 0	..	2·00	11 20 0	943	
	21	Tobacco	6 tolas	..	2·00	10 3 0	826	
	12	Wheat	1 5 0	..	1·00	7 2 8	579	

12	Wheat	1 5 0	..	1·00			
14	English vegetables—						
	(a) Cabbage						
	(b) Cauliflower.	..	60 pkts.	·500	Rs. 107-14		
	(c) Tomato						
5	Oats and peas for fodder ..	0 3 0	0 9 0	1·00	120 0 0	9,800	
13	Maize for fodder ..	1 20 0	..	2·00	542 20 0	44,485	
9	Napier grass	12 0 0	..	1·00	114 0 0	9,348	
14	Dhaincha	..	2 10 0	3·00	..	..	Ploughed up for green manure for *aman* paddy.
10	Cowpea	..	0 30 0	2·00	..	..	Ploughed up for green manure for rabi crops.
9	Artificial manure heaps ..	12 heaps	..	..	720 0 0	5,760	
1	Silo 1	..	..	..	56 0 0	4,480	

Total result of 18 Demonstration Centres of each crop of the Dinajpur district during the year 1940-41 (Abstract).

Total number of demonstration under each artificial demonstration.	Total number of cultivators dealt with.	Name of crops.	Quantity of seeds supplied. From Government Farm.	By purchase.	Total area in acres under each crops.	Total outturn of each crop in both mds and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
18	96	*Aus* paddy	30 0 0	..	30 ·00	470 7 0	38,554	·83 damaged by goats and cattle, etc.
	202	*Aman* paddy	54 0 0	..	144 ·00	1,898 1 8	155,639	28 ·91 for want of rainfall.
	84	Maize, G. M.	7 20 0	..	10 ·00	2,098 20 0	172,077	·17 damaged by cattle.
	53	Dhaincha, G. M.	..	11 10 0	15 ·00	..		Ploughed up at the time of flowering and planted *aman*.
	63	Cowpea, G. M.	..	3 30 0	10 ·00	..		Ploughed up at the time of flowering and planted for sowing rabi crops.
	41	Napier grass	72 0 0	..	6 ·00	446 20 0	24,513	

41	Napier grass	72 0 0	..	6·00	446 20 [illegible]	[illegible]	[illegible]
[illegible]	Peas Patni white ..	[illegible]	..	[illegible]	[illegible]	2,978	·70 damaged by cattle.
50	Wheat 52	6 30 0	..	6·00	42 21 8	3,486	·23 damaged (plants died in early stage).
39	Oats and peas	2 10 0	3 23 8	6·00	657 29 0	53,892	·47 damaged by goats and cattle.
67	Gram S. 4	6 12 0	..	12·00	58 12 0	4,768	·40 damaged by goats and insects.
71	Lentil No. 5	5 16 0	..	12·00	85 15 0	6,700	Ditto.
58	Tori No. 7	1 14 0	..	12·00	49 28 0	40,731	
69	Rangoon potato ..	..	18 0 0	1·80	152 26 0	12,514	
106	Tobacco	36 tolas	..	12·00	114 3 0	93,332	
99	English vegetables—						
	(a) Cabbage	..	360 pkts	3·00	Rs. 1,124-1		
	(b) Cauliflower.						
	(c) Tomato.						

Artificial farmyard manure heaps—167, heaps.—17,152 mds., 140,646 lbs.
Water-hyacinth compost—24 heads, 3,118 mds., 255,7171bs. and silo—5,326 mds. 20 srs., 26,773 lbs.

Result of cultivation in the Union Board Farm of Naogaon-Nator sub-district (District Rajshahi) during 1940-41.

Name of each Union Board Farms.	Name of owner.	Name of crop.	Quantity of seeds supplied. From Government Farm.	Quantity of seeds supplied. By purchase or owner's.	Total area in acres sown under each crop.	Total outturn of crop.		Remarks. (cause of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
(1) Par-Naogaon.	Babu Sricharan Sarker.	(1) Marichbutty *aus* paddy.	1 0 0	..	1·00	15 0 0	1,230	The weather condition was not satisfactory.
		(2) C. G. jute ..	0 1 0	..	0·33	7 15 0	604	
		(3) Maize (fodder) ..	0 5 0	..	0·17	150 0 0	12,300	
		(4) Joar (fodder) ..	..	0 4 0	0·17	120 0 0	9,840	
		(5) Dudsar *aman* ..	0 20 0	..	1·50	18 30 0	1,538	
		(6) Mustard (Tori No. 7).	0 1½ 0	..	0·33	1 11 0	104	
		(7) Lentil ..	0 6 0	..	0·33	1 30 0	144	
		(8) Gram (S.4) ..	0 7 0	..	0·33	..	..	Not harvested.
		(9) Matihari tobacco	½ tola	..	0·17	..	..	Ditto.
		(10) English vegetables.	22 pkts.	..	0·17	Total production valuing Rs.27.		
		(11) Napier grass ..	2 mds. of seed cutting.		0·17	31 0 0	2,542	Seed cutting supplied during 1939-40. The crop was not properly looked after and hence damaged badly by stray cattle.

stray cattle.

		(12) Dhaincha (for green manuring).	..	0 10 0		0·66	Green manured.		
(2) Araji-Naogaon.	Maulvi Ahmed Ali.	(1) Mustard (Tori No. 7).	0 1½ 0	..		0·33	0 30 0	60	
		(2) Lentil ..	0 6 0	..		0·33	0 35 0	70	
		(3) Gram (S.4) ..	0 7 0	..		0·33	Not harvested.		
		(4) Matihari tobacco	½ tola.	..		0·17	Ditto.		
		(5) English vegetables	..	20 pkts.		0·17	Total production valuing Rs.24.		
(3) Fazilpur	Md. Safiuddin ..	(1) Dharial *aus* paddy	1 0 0	..		1·00	12 0 0	984	
		(2) C. G. jute ..	0 1 0	..		0·33	5 0 0	410	
		(3) Maize (fodder)	0 5 0	..		0·17	32 20 0	2,665	
		(4) Dudsar *aman* paddy.	2 0 0	..		5·33	72 0 0	5,904	
		(5) Mustard (Tori No. 7).	0 1½ 0	..		0·33	1 5 0	92	
		(6) Lentil ..	..	..		0·33	1 20 0	123	
		(7) Gram (S.4) ..	0 7 0	..		0·33	Not harvested.		
		(8) Matihari tobacco	½ tola	..		0·17	Under curing.		
		(9) English vegetables	..	20 pkts.		0·17	Total production valuing Rs.18.		
		(10) Napier grass ..	2 mds. of seed cuttings.	..		0·17	12 0 0	984	
		(11) Dhaincha (for green manuring).	..	0 10 0		0·66	Green manured.		

Name of each Union Board Farms.	Name of owner.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of crop.		Remarks (cause of failure and damage, etc., to be given in short).
			From Government Farm.	By purchase or owner's.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
(4) Hogol-baria.	Babu Gajendra Nath Ghosh.	(1) Kataktara *aus* paddy.	0 26 0	..	0·66	22 30 0	1,864	Seeds supplied during 1938-39 and 1939-40.
		(2) Surjyamukhi *aus* paddy.	0 33 0	..	0·83	26 10 0	2,152	
		(3) Charnak *aus* paddy.	0 20 0	..	0·50	13 15 0	1,096	
		(4) C. G. jute ..	0 1 0	..	0·33	9 30 0	798	
		(5) Maize (fodder)	0 5 0	..	0·17	130 0 0	10,660	
		(6) Dudsar *aman* paddy.	1 0 0	..	2·66	5 25 0	460	A poor crop due to unfavourable weather condition.
		(7) Mustard (Tori No. 7).	0 3 0	..	0·66	6 0 0	492	
		(8) Lentil ..	0 6 0	..	0·66	4 10 0	348	
		(9) Gram (S. 4) ..	0 7 0	..	0·33	Not harvested.		
		(10) Motihari tobacco	½ tola	..	0·17	Ditto.		
		(11) English vegetables.	..	20 pkts.	0·17	Total production valuing Rs. 16-4.		
		(12) Napier grass ..	..	2 mds. of seed cuttings.	0·17	175 0 0	14,350	
		(13) Dhaincha (for green manuring).	..	0 10 0	0·66	Green manured.		

Results of Demonstration Centres of Naogaon-Nator sub-district (District Rajshahi) during the year 1940-41.

Number of Demonstration Centres under each Agricultural Demonstrator.	Total numbr of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of crop.		Remarks (cause of failure and damage, etc., to be given in short.)
			From Government farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
Under office Agricultural Demonstrator—One centre.	22	(1) Dharial *aus* paddy ..	2 0 0	..	2·00	20 32 0	1,706	
		(2) Maize (fodder) ..	0 10 0	..	0·33	182 0 0	14,924	
		(3) Joar (fodder)	..	0 8 0	0·33	204 0 0 (green staff.)	16,728	
		(4) Dudsar *aman* paddy ..	3 0 0	..	8·00	36 28 0	3,010	Out of 8 acres 4·5 acres could not be transplanted on account of insufficient rainfall.
		(5) Mustard (Tori No. 7) ..	0 3 0	..	0·66	3 0 0	246	
		(6) Lentil	0 12 0	..	0·66	4 0 0	328	
		(7) Pea (Patna) ..	..	0 7 0	0·33	1 10 0	92	
		(8) Oat and Pea (fodder) ..	..	0 13 0	0·33	20 0 0	1,640	

Number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of crop.		Remarks (cause of failure and damage, etc., to be given in short.)
			From Government farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
		(9) Gram (S. 4)	0 14 0	..	0·66	Not harvested.		
		(10) Wheat (P. 52) ..	0 15 0	..	0·33	Ditto.		
		(11) Matihari tobacco ..	2 tolas	..	0·66	Ditto.		
		(12) English vegetables ..	..	22 pkts.	0·17	Total production valuing Rs. 22.		
		(13) Napier grass ..	..	4 mds. of seed cuttings.	0·33	12 0 0		984 planted in September.
		(14) Dhaincha (for green manuring).	0 20 0		1·66	Green manured.		
Under Jute Agricultural Demonstrator—3 centres.	65 in three Centres.	(1) Dharial *aus* paddy ..	2 0 0	..	2·00	19 15 0	1,550	
		(2) Maize (fodder) ..	0 10 0	..	0·33	170 0 0	13,600	
		(3) Joar (fodder)	..	0 24 0	1·00	441 0 0 (green staff.)	35,280	
		(4) Dudsar *Aman* paddy ..	11 0 0	..	29·30	71 30 0	5,740	Out of 29·30 acres only 9·68 acres could be transplanted due to defective rainfall'.

		(5) Mustard (Tori No. 7) ..	0 9 0	..	2·00	6 37 0	554	
		(6) Lentil ..	0 36 0	..	2·00	9 10 0	740	
		(7) Pea (Patna) ..	..	0 21 0	1·00	4 0 0	320	
		(8) Oat and Pea (fodder) ..	..	0 39 0	1·00	25 20 0	2,040	
		(9) Gram (S. 4) ..	1 2 0	..	2·0	Not harvested.		
		(10) Wheat (P. 52) ..	1 5 0	..	1·00	Ditto.		
		(11) Matihari. tobacco ..	6 tolas	..	2·00	Ditto.		
		(12) English vegetables ..	..	60 pkts.	0·50	Total production valuing Rs. 50.		
		(13) Napier grass ..	12 mds. of seed cuttings.		1·00	11 10 0	900	
		(14) Dhaincha (for green manuring.)	..	1 24 0	5·32	Green manured.		
Under Hapania Agricultural Demonstrator—4 centres.	108 in 4 centres.	(1) Dharial *aus* paddy ..	8 0 0	..	8·00	117 32 0	9,424	
		(2) Maize (fodder) ..	1 0 0	..	1·33	689 0 0	55,120	
		(3) Joar (fodder) ..	..	0 32 0	1·33	919 0 0	73,520	
		(4) Dudsar *aman* paddy ..	12 0 0	..	32·00	67 5 0	5,370	Out of 32 acres, 17 acres could not be transplanted on account of insufficient rainfall. Only 12·5 acres could be harvested.
		(5) Mustard (Tori No. 7) ..	12 0 0	..	2·66	3 35 0	310	Poor yield due to continued drought.
		(6) Lentil ..	1 8 0	..	2·666	17 25 0	1,410	

Number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of crop.		Remarks (cause of failure and damage, etc., to be given in short.)
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
		(7) Pea (Patna)	..	0 28 0	1·33	34 20 0	360	
		(8) Oats and Pea (fodder) ..	..	1 12 0	1·33	33 35 0	2,710	
		(9) Green (S. 4)	1 16 0	..	2·66	Not harvested.		
		(10) Wheat (P. 52) ..	1 20 0	..	1·33	Ditto.		
		(11) M. Tobacco	8 tolas	..	2·66	Ditto.		
		(12) English vegetables ..	..	80 pkts.	0·66	Total production valuing Rs. 57-8.		
		(13) Napier grass	16 mds. of seed cuttings.		1·50	10 20 0	840	
		(14) Dhaincha (for green manuring).	..	2 0 0	6·66	Green manured.		
Under Mohadevpur Agricultural Demonstrator—3 centres.	85 in three centres.	(1) Dharal *aman* paddy ..	6 0 0	..	6·00	89 35 0	7,370	
		(2) Maize (fodder) ..	0 30 0	..	1·00	151 15 0	12,482	
		(3) Joar (fodder)	..	0 24 0	4·00	142 10 0	11,665	
		(4) Dudsar *aman* paddy ..	9 0 0	..	21·00	272 22 0	22,349	

		(6) Lentil	0 36 0	..	2·00	6 5 0	502	
		(7) Pea (Patna)	..	0 21 0	1·00	3 30 0	308	
		(8) Oat and Pea (fodder) ..	..	0 39 0	1·00	105 0 0	8,610	
		(9) Gram (S. 4)	1 2 0	..	2·00	Not harvested.		
		(10) Wheat (P. 52) ..	1 5 0	..	1·00	Ditto.		
		(11) Matihari tobacco ..	6 tolas	..	2·00	Ditto.		
		(12) English vegetables ..	..	58 pkts.	0·50	Total production valuing Rs. 50.		
		(13) Napier grass ..	12 mds. of seed cuttings.		1·00	16 35 0	1,384	Planted in September.
		(14) Dhaincha for (green manuring).	..	1 20 0	5·00	Green manured.		
Under Nator Agricultural Demonstrator—3 centres.	65 in three centres.	(1) Dharial *aus* paddy ..	6 0 0	..	6·00	149 4 0	12,226	
		(2) Maize (fodder) ..	0 30 0	..	1·00	709 0 0	58,138	
		(3) Joar (fodder)	..	0 24 0	1·00	654 0 0	52,628	
		(4) Dudsar *aman* paddy (transplanted).	6 30 0	..	18·00	....		The crop failed absolutely. Transplanting could not be done due to want of rainfall.
		(5) Indrasail *aman* paddy (broadcast).	6 0 0	..	6·00	63 20 0	5,207	
		(6) Mustard (Tori No. 7) ..	0 9 0	..	2·00	18 18 0	1,512	
		(7) Lentil	0 36 0	..	3·00	23 2 0	1,890	

Number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of crop.		Remarks (cause of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	Lbs.	
		(8) Pea (Patna)	..	0 21 0	1·00	....		Threshing not done.
		(9) Oats and Peas (fodder) ..	..	0 39 0	1·00	100 0 0	8,200	
		(10) Potato (Rangoon) ..	..	3 0 0	0·30	44 22 0	3,652	
		(11) Gram (S. 4)	1 2 0	..	2·00	....		Threshing not done.
		(12) Wheat (P. 52) ..	1 5 0	..	1·00	....		Ditto.
		(13) Motihari Tobacco ..	6 tolas	..	2·00	....		Curing not finished.
		(14) English vegetables ..	..	58 pkts.	0·50	....		Total production valuing Rs. 29-4.
		(15) Napier grass	12 mds. of seed cuttings.		1·00	83 0 0	6,806	Planted in September 1940
		(16) Dhaincha (for green manure)	..	1 20 0	5·00	Green manured.		

The results of cultivation in the Union Board Farms of Rajshahi district during 1940-41.

Total number of Demonstration Centres in the District.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government Farm.		Quantity of seed supplied. By purchase.		Total area in acres sown under each crop.	Total outturn of each crop		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
		Kharif crops.	Md. sr. ch.	lbs.	Md. sr. ch.	lb..		Md. sr. ch.	lbs.	
14	345	(1) Dharial *aus paddy* ..	24 0 0	1,920	....		24·00	396 38 0	31,756	
		(2) (*i*) Dudsar *aman* paddy (transplanted).	41 30 0	3,340	....		111·30	448 0 0	35,850	
		(*ii*) Indrasail *aman* paddy (broadcasted).	6 0 0	480	....		6·00	63 20 0	5,080	
		(3) (*i*) Joar (for fodder) ..	..	..	2 32 0	224	4·06	2,360 10 0	188,820	
		(*ii*) Maize (for fodder) ..	3 0 0	240			4·00	1,901 15 0	152,110	
		(*iii*) Napier grass ..	56 0 0	4,480	....		4·66	133 25 0	10,690	
		(4) Dhaincha (for G. M.)	....		7 4 0	568	23·4			Ploughed down.
		Rabi crops.								
		(5) Sabour gram ..	4 36 0	392	....		9·33	73 36 0	5,912	
		(6) Mustard (tori No. 7)	1 2 0	84	....		9·33	40 28 0	3,256	
		(7) Wheat (P. 52) ..	5 10 0	420	....		4·66	16 27 0	1,334	
		(8) Lentil (No. 5) ..	4 8 0	336	....		9·33	60 2 0	4,804	
		(9) Motihari Tobacco ..	28 tolas		....		9·33	54 5 0	4,330	
		(10) White Patna peas ..	....		2 18 0	196	4·66	26 15 0	2,110	
		(11) Potato (Rangoon) ..	....		3 0 0	240	0·30	44 22 0	3,564	
		12 (*i*) Cauliflower (*ii*) Cabbage .. (*iii*) Tomato ..	....		278 pkts.		2·33	....		Total products valuing Rs. 208-12.
		(13) Oats and peas (fodder)	....		2 32 0 1 30 0	324 140	4·66	284 15 0	22,750	

Name of district.	Total number of Union Board Farm.	Name of crop.	Quantity of seed supplied.				Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks (cause of failure and damage, etc.).
			From Government Farm.		By purchase.					
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif crops.								
Rajshahi	4 union board farms.	(1) (*i*) Kataktara *aus* paddy	0 26 0	52	....		0·66	22 30 0	1,820	
		(*ii*) Surjamukhi *aus* paddy	0 33 0	66	....		0·83	26 10 0	2,100	
		(*iii*) Charnock *aus* paddy	0 20 0	40	....		0·50	13 0 0	1,070	
		(*iv*) Dharial *aus* paddy ..	1 0 0	80	....		1·00	12 0 0	960	
		(*v*) Marichbutty paddy	1 0 0	80	....		1·00	1 0 0	1,200	
		(2) Dudsar *aman* paddy	3 20 0	280	....		9·49	96 15 0	7,710	
		(3) C. G. Jute ..	0 3 0	6	....		1·00	22 5 0	1,770	
		(4) (*i*) Joar (fodder) ..	....		0 4 0	8	80·17	60 0 0	4,800	
		(*ii*) Maize (fodder) ..	0 15 0	30	....		0·50	237 20 0	19,000	
		(*iii*) Napier grass ..	6 0 0	480	....		0·66	228 0 0	18,240	
		(5) Dhaincha (grains) ..	....		0 30 0	60	2·00	....		Ploughed down.
		Rabi crops.								
		(6) Sabour gram ..	0 28 0	56	....		1·33	11 20 0	920	
		(7) Mustard (Tori No. 7	0 7 8	15	....		1·66	9 6 0	732	
		(8) Lentil (No. 5) ..	0 24 0	48	....		1·33	8 15 0	670	
		(9) Matihari tobacco ..	2 tolas		....		0·66	7 10 0	580	
		(10) (*i*) Cauliflower .. (*ii*) Cabbage .. (*iii*) Tomato ..	....		82 pkts.		0·66	Total products valuing Rs. 85-4.		

Rajshahi Sadar ..	4	Jute *Kharif*	....		0 8 0	6	1·00	22 4 12	1,760½	
		Paspal	Own seeds		....	..	2·50	41 21 8	3,323	
		Marichbutty	Do.		....	..	2·50	48 5 12	3,851½	
		Maize	0 15 0	30	....	..	0·50	83 30 0	6,700	
		Napier	6 0 0	480	....	..	0·66	50 20 0	4,040	No cuttings are reported from 2 union board farms owing to bad seasons.
		Indrasail	Own seed		....	..	1·00	11 28 12	937½	Crop very poor for insufficient rain.
		Dudsar	Do.		....	..	0·50	10 31 12	827½	Ditto.
		Tillakkachery ..	0 20 0	40	....	..	0·50	3 20 0	280	Ditto.
		Latisail	0 8 0	16	....	..	0·50	4 20 0	360	Ditto.
		Badkalamkati ..	Own seed		....	..	0·50	5 10 0	420	Ditto.
		Dhaincha	....		0 24 0	48	1·60	....	..	Ploughed under as green manure.
		Tori No. 7 ..	0 6 0	12	....	..	1·33	3 16 12	273½	Crop failed at Namajgram, Mahisalbari and at Miapur.
		Lentil No. 5 ..	0 24 0	48	....	..	1·33	11 23 4	926½	Crop failed on Godagari Farm.
		Gram (S. 4) ..	0 28 0	56	....	..	1·33	17 36 12	1,433½	
		Linseed	0 8 0	16	....	..	0·66	5 16 12	433½	Crop affected for want of moisture.
		Wheat (P. 52) ..	....		0 29 0	58	0·66	6 9 8	499	Crop failed on Godagari Farm.
		Agartala kalai ..	0 8 0	16	....	..	0·16	16 0 0	1,280	The yield is from Sadar Union Board Farm. The crop practically failed on the other three farms.
		Tobacco, Motihari ..	2 tolas		....	..	·66	....		Not yet cured.
		English vegetables—								
		Cabbage	....	..	24 pkts.	..				
		Tomato	....	..	24 "	..	·66	Rs. 89-8		The crop was very poor for bad season condition.
		Cauliflower ..	....	..	32 pkts.	..				
		Potato	....	..	4 0 0	320	·50	7 35 0	360	

Results of cultivation in Union Board Farm of District during 1940-41. (Miapur).

Name of Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn in maund and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Miapur ..	Munshi Md. Eakub.	(1) C. G. jute ..	..	..	..	....		
		(2) Paspai *aus* ..	..	..	..	....		
		(3) Marichbuty *aus* ..	..	..	..	....		
		(4) Maize ..	..	..	..	....		
		(5) Napier grass ..	2 0 0	..	..	....		
		(6) Dhaincha ..	..	..	..	....		
		(7) Indrasail *aman* ..	..	..	..	....		
		(8) Dudsar *aman* ..	..	..	..	....		
		(9) Agartala kalai ..	0 2 0	..	·10	1 5 0	90	
		(10) Tori No. 7 ..	0 1 8	..	·30	0 30 0	60	
		(11) Lentil ..	0 6 0	..	·30	4 0 0	320	
		(12) Gram ..	0 7 0	..	·30	Not yet harvested.		
		(13) Wheat P. 52 ..	0 7 8	..	·15	Ditto.		
		(14) Linseed ..	0 2 0	..	·10	0 36 0	72	
		(15) Tobacco ..	½ tola	..	·10	Not yet harvested.		
		(16) Potato ..	..	1 0 0	·10	3 0 0	240	
		(17) English vegetables		20 pkts.	·16	Sale proceed realised Rs. 15.		
		Oats.	0 24 0					

Oats.

Results of cultivation in Union Board Farm of District during 1940-41. ([illegible])

Name of Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Government farm.	By purchase.	Total area in acres sown under each crop.	Total outturn in maund and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Mahishalbari	Babu Adyanath Mazumdar.	(1) C. G. jute ..	..	0 1 0	·33	7 0 0	574	
		(2) Paspai *aus* ..	..	..	·50	5 0 0	410	
		(3) Marichbuty ..	..	..	·50	4 0 0	328	
		(4) Maize ..	0 5 0	..	·16	20 0 0	1,040	
		(5) Napier grass ..	2 0 0	..	·16	....	..	
		(6) Dhaincha ..	..	0 20 0	·60	....	..	Ploughed down as green manure.
		(7) Latisail ..	0 8 0	..	·50	4 20 0	369	
		(8) Badkalamkati 65 ..	own seeds	..	·50	5 10 0	430½	
		(9) Agartala kalai ..	0 2 0	..	·16	15 0 0	1,230	
		(10) Tori No. 7 ..	0 1 8	..	·33	....	..	Failure.
		(11) Lentil ..	0 6 0	..	·33	....	..	Do.
		(12) Gram ..	0 7 0	..	·33	3 7 0	260	
		(13) Wheat P. 52 ..	0 7 8	..	·16	....	..	Failure.
		(14) Linseed ..	0 2 0	..	·16	1 27 0	117½	
		(15) Tobacco ..	½ tola	..	·16	3 5 0	256	
		(16) Potato ..	..	1 0 0	·10	0 10 0	20½	Failure.
		(17) English vegetables	..	20 pkts.	·16	Sale-proceed realised Rs. 5-12.		

Results of cultivation in Union Board Farm of District during 1940-41. (Baneswar).

Name of Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn in maund and lbs.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Namazgram	Babu Jagannath Agarwalla and Iman Mandal.	(1) C. G. jute ..	..	0 1 0	·33	7 25 0	625	
		(2) Paspai *aus* ..	12 0 0	..	1	18 0 0	1,476	
		(3) Marichbuty *aus* ..	12 0 0	..	1	22 15 0	1,834½	
		(4) Maize ..	0 5 0	..	·16	31 20 0	2,583	
		(5) Napier grass ..	2 0 0	..	·16	30 20 0	2,501	
		(6) Dhaincha ..	..	0 8 0	·60	....	..	Ploughed under as green manure.
		(7) Indrasail ..	..	..	·50	1 30 0	143½	
		(8) Tilakkacheri ..	1 20 0	..	·50	3 20 0	287	
		(9) Agartala kalai ..	0 2 0		·16	0 30 0	61½	
		(10) Tori No. 7 ..	0 1 8	..	·33	....	..	Totally damaged by insects.
		(11) Lentil ..	0 6 0	..	·33	3 20 0	287	
		(12) Gram (S. 4) ..	0 7 0	..	·33	....	..	Not yet harvested.
		(13) Wheat P. 52 ..	0 7 8	..	·16	....	..	Ditto.
		(14) Linseed ..	0 2 0	..	·16	0 32 0	65½	
		(15) Tobacco ..	½ tola	..	·16	....	..	Not yet cured.
		(16) Potato ..	..	1 0 0	·10	1 10 0	104½	
		(17) English vegetables	..	20 pkts.	·16	Sale-proceed realised Rs. 31-4.		

Results of cultivation in Union Board Farm of District during 1940-41. (Sonaikandi).

Name of Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn in maund and lbs.		Remarks.
			From Government farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Sonaikandi ..	Md. Samirud-din Mandal.	(1) C. G. jute ..	..	0 1 0	0·30	7 19 12	599	
		(2) Paspai *aus* ..	..	..	1	18 21 8	1,483	
		(3) Marichbuty *aus* ..	..	..	1	21 30 12	1,742	
		(4) Maize ..	0 5 0	..	·15	32 10 0	2,580	
		(5) Napier grass ..	2 0 0	..	·15	....		
		(6) Dhaincha ..	..	0 8 0	·50	....	..	Ploughed under as green manure.
		(7) Indrasail ..	..	..	·50	9 38 12	798	
		(8) Dudsar ..	..	..	·50	10 13 12	828	
		(9) Agartala kalai ..	0 2 0	..	·15	16 0 0	480	
		(10) Tori No. 7 ..	0 1 8	..	·30	2 26 12	214	
		(11) Lentil ..	0 6 0	..	·30	4 3 0	327	
		(12) Gram (S. 4) ..	0 7 0	..	·30	....	..	Not yet harvested.
		(13) Wheat P. 52 ..	0 7 8	..	·15	....	..	Ditto.
		(14) Linseed ..	0 2 0	..	·15	2 1 12	164	
		(15) Tobacco ..	½ tola	..	·15	....	..	Not yet cured.
		(16) Potato ..	..	1 0 0	·10	3 15 0	270	
		(17) English vegetables	..	20 pkts.	·15	Sale-proceed realised Rs. 37-8.		

Results of cultivation in the Demonstration Centres of Rajshahi Sadar, 1940-41.

Total number of Demonstration Centres.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop.		Remarks.
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
9 in *khariff* and 12 in *rabi*. Total 21.	225	Puspai	23 0 0	..	23	281 27 0	22,826½	
		Marichabuty ..	23 0 0	..	23	298 18 0	24,179	
		Jowar	..	3 24 0	6	1,387 38 0	112,083½	
		Napier grass	48 0 0	..	3·5	186 20 0	15,189	
		Indrasail	11 20 0	..	11·5	50 25 12	4,106	
		Dudsar	2 25 0	..	·7	Nil	Nil	
		Tilakkachery	1 20 0	..	1·5	6 20 0	533	
		Latisail	4 20 0	..	12	96 32 0	7,744	
		Badkalamkati ..	4 20 0	..	12	88 28 0	7,096	

Badkalamkati ..	4 20 0	..	12	88 28 0	[illegible]	
Dhaincha	..	3 12 0	13·33	Nil	Nil	Ploughed under as green manure.
Tori No. 7	3 24 0	..	8	21 26 4	1,748½	
Lentil	1 28 0	..	6	47 24 12	3,843	Crop was very poor at Godagari and Charghat.
Gram	3 6 0	..	8	16 16 8	1,313	The yield is from 6 acres. Result of 9 Demonstration Centres are not ready.
Patna peas ..	3 5 0	..	4	13 20 12	1,149	
Wheat	..	4 0 0	4	..	..	Figures are not yet ready.
Oats and peas ..	..	1 32 0	4	157 35 0	12,695	
Tobacco	24 tolas	..	5·65	..	..	Results are not yet ready.
Potato	..	12 0 0	1·2	21 12 8	1,902½	Failure for want of moisture.
English vegetable ..	..	24 pkts.	1·2	Sale-proceeds Rs. 354-13.		Ditto.

The results of cultivation in the Demonstration Centres of Rajshahi District—Sadar during 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied. From Government farm.		By purchase.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage etc.).
1	2	3	4		5		6	7		8
					Sadar.					
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
3	38	*Aus* paddy	16 0 0	1,280	..	..	16·00	162 19 11	12,999	
	13	Jowar ..	..	..	1 8 0	96	2·00	595 3 0	47,606	
	13	Napier grass	12 0 0	960	..	..	1·00	..	..	Not yet ready to harvest.
	27	Dhaincha	..	..	1 8 0	96	4·00	..	..	Ploughed down for G. M.
	35	*Aman* paddy	9 25 0	770	..	..	14·00	23 10 12	1,861½	Crop damaged due to drought.
	12	Mustard (Tori No. 7) ..	0 9 0	18	..	..	2·00	10 35 0	870	
	12	Lentils No. 5	0 36 0	72	..	..	2·00	17 3 8	1,367	
	11	Peas, Patna white	0 17 0	34	0 3 0	6	1·00	6 26 4	532½	
	12	Oats and peas .. {Oats Peas		.. ..	0 24 0 0 15 0	48 30	1·00	45 20 0	3,640	
	6	Wheat (P. 52)	..	..	1 5 0	90	1·00	12 12 4	984½	
	12	Gram (S. 4)	1 2 0	84	..	..	2·00	25 19 0	2,038	
	13	Potato ..	..	..	3 0 0	240	·30	8 12 0	664	
	19	English vegetables {Cabbage Tomato Cauliflower	.. .. ..	.. .. ..	18 pkts 18 ,, 24 ,,		00·373	Rs. 64-1 sold.		
	22	Motihari tobacco	6 tolas	..	..	..	1·066⅔	Not yet cured.		
					Baneswar.					
	56	*Aus* paddy	24 0 0	1,920	..	..	24·00	297 26 0	23,812	
	17	Jowar	..	..	1 8 0	96	2·00	523 15 0	41,870	
	12	Napier grass	12 0 0	960	..	..	1·00	134 20 0	11,209	

16	Dhaincha	..	..	1 8 0	96	4·00	..	..	Ploughed down for G. M.
18	*Aman* paddy	4 0 0	320	..	..	6·00	33 35 0	2,777½	Crop damaged due to drought.
11	Mustard (tori No. 7) ..	0 9 0	18	..	..	2·00	8 39 0	718	
12	Lentil No. 5	0 36 0	72	..	..	2·00	15 24 0	1,279	
6	Peas, Patna white	0 21 0	42	..	..	1·00	3 33 0	373½	
7	Oats and peas—Peas ..	0 15 0	30	Oats 0 24 0	48	1·00	36 30 0	2,940	
7	Wheat (P. 52)	..	..	1 5 0	90	1·00	6 0 0	480	
12	Gram (S. 4)	1 2 0	84	..	..	2·00	24 33 0	1,986	
12	Potato	..	..	3 0 0	240	00·30	4 32 0	393½	
13	English vegetables { Cabbage ..	..	..	18 pkts.	..	·333	Rs. 50 sold.	..	
	Tomato ..	..	..	18 ,,	..				
	Cauliflower	..	..	24 ,,	..				
16	Motihari tobacco	6 tolas	..	..	..	2·00	..	..	Not yet cured.

Godagari.

25	*Aus* paddy	6 0 0	480	..	..	6·00	115 5 0	9,210	
15	Jowar	..	..	1 8 0	96	2·00	269 0 0	21,520	
8	Napier grass	12 0 0	960	..	..	1·00	Not yet ready.		
31	Dhaincha	..	..	1 8 0	96	4·00	Ploughed down for G. M.		
45	*Aman* paddy	9 0 0	720	..	..	24·00	188 27 0	15,094	
15	Mustard (tori No. 7) ..	0 9 0	18	..	..	2·00	2 30 12	221½	
12	Lentils No. 5	0 36 0	72	..	..	2·00	6 30 4	540½	
14	Peas, Patna white	0 21 0	42	..	..	1·00	1 11 8	103	
17	Oats and peas—Peas ..	0 15 0	30	Oats 0 24 0	48	1·00	81 25 0	6,530	
9	Wheat (P. 52)	..	..	1 5 0	90	1·00	0 18 8	37	
12	Gram (S. 4)	1 2 0	84	..	..	2·00	16 16 8	1,313	
11	Potato	..	..	3 0 0	240	·30	1 5 8	91	

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied. From Government farm.		By purchase.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
	28	English vegetables { Cabbage ..	..	..	18 pkts.	..	·30	Rs. 25-4 sold.		
		Tomato ..	..	..	18 ,,	..				
		Cauliflower	..	..	24 ,,	..				
	23	Motihari tobacco	6 tolas		..	..	2·00	20 34 8	1,669	
		Charghat.								
	8	Napier grass	12 0 0	960	..	..	1·00	52 0 0	4,160	
	12	Mustard (tori No. 7) ..	0 9 0	18	..	..	2·00	1 34 0	150	
	12	Lentils No. 5	0 36 0	72	..	..	2·00	7 38 8	637	
	12	Peas, Patna white	0 21 0	42	..	..	1·00	1 32 0	144	
	12	Oats and peas—								
		Peas	0 15 0	30	..	..	1·00	..	..	Fed to cattle.
		Oats	0 24 0	48	..	..				
	6	Wheat (P. 52)	..	..	1 5 0	90	1·00	4 3 0	326	
	12	Gram (S. 4)	1 2 0	84	..	..	2·00	18 5 0	1,450	
	9	Potato	..	..	3 0 0	240	·30	6 30 0	540	
	23	English vegetables { Cabbage ..	..	..	18 pkts.	..	·36	Rs. 215-5 sold.		
		Tomato ..	..	..	18 ,,	..				
		Cauliflower	..	..	24 ,,	..				
	13	Motihari tobacco	6 tolas	..	..	..	·56	Not yet cured.		

The results of cultivation in the Union Board Farm of Rangpur District during 1940-41.

Name of district.	Total number of Union Board Farms.	Name of crop.	Quantity of seed supplied. From Government farms.		By purchase.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
1	2	3	4		5		6	7		8
			Md. sr. ch.	lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Kharif.								
Rangpur ..	11 Nos.	*Aus* paddy	2 0 0	160	..	..	7·00	126 19 0	10,118	
		Aman paddy ..	12 0 0	960	..	..	22·00	647 5 0	51,770	
		Maize	1 30 0	140	..	..	2·20	1,103 0 0	88,240	
		Jute	0 10 0	20	..	..	2·20	530 29 0	42,458	
		Napier grass ..	42 0 0	3,360	..	..	3·63	1,599 0 0	127,920	
		Cowpea	..	..	1 2 0	84	2·20	..	..	Ploughed down as green manure.
		Rabi.								
		Gram	1 37 0	154	..	..	3·63	16 17 0	1,314	
		Lentil	1 26 0	132	..	..	3·63	28 3 0	2,046	
		Mustard	0 16 8	33	..	..	3·63	19 9 0	1,538	
		Oats and peas ..	..	..	3 23 0	286	3·63	498 0 0	39,840	
		Wheat	..	..	4 5 0	330	3·63	31 31 0	2,542	
		Tobacco	5½ tolas	..	..	..	1·76	11 11 0	902	
		Potato	..	..	11 0 0	880	1·10	150 22 0	12,044	
		English vegetables ..	..	..	220 packets	..	1·76	Rs. 245	..	

The results of cultivation in the Union Board Farms of Rangpur district during 1940-41.

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seeds supplied.		Total area in acres sown under each crop.	Total outturn of each crop.		Remarks.
			From Govern-ment farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Chiklibhatta Union Board Farm, Sadar.	Babu Tarapada Pandit	*Aus* paddy ..	..	..	1	15 0 0	1,200	
		Aman paddy ..	2 0 0	..	4	64 0 0	5,120	The outturn of 1940-41 was heavily affected by persistent drought.
		Maize	0 10 0	..	0·33	120 0 0	9,600	
		Jute	..	0 1 4	0·33	8 0 0	640	
		Napier grass ..	4 0 0	..	0·33	315 0 0	21,200	
		Cowpea	..	0 6 0	0·33	Green manure.	..	
		Gram	..	0 7 0	0·33	1 0 0	80	
		Lentil	0 6 0	..	0·33	2 20 0	200	
		Mustard	0 1 8	..	0·33	2 0 0	160	
		Oats and peas ..	..	0 13 0	0·33	75 0 0	6,000	
		Wheat	..	0 15 0	0·33	6 0 0	106	
		Tobacco	½ tola	0 10 0	0·16	1 13 0	1,200	
		Potato	..	1 0 0	·10	15 0 0	..	
		English vegetables ..	..	20 packets	0·16	Rs. 50	..	
Mithapukur-Barahazrat-pur Union Board Farm.	Rai Sahib Manmatha Nath Bhattacharji.	*Aus* paddy ..	..	..	1	19 28 0	1,574	
		Aman paddy	2 0 0	..	4	65 0 0	5,200	
		Maize	0 10 0	..	0·33	123 0 0	9,840	
		Jute	..	0 1 4	0·33	8 10 0	740	
		Oats and peas ..	..	0 13 0	0·33	66 0 0	5,280	
		Napier grass	4 0 0	..	0·33	329 0 0	26,320	
		Cowpea	..	0 6 0	0·33	Green manure.		

		Gram	..	0 7 0	0·33	[illegible]	140
		Lentil	0 6 0	..	0·33	2 20 0	200
		Mustard	0 1 8	..	0·33	2 0 0	160
		Wheat	..	0 15 0	0·33	6 0 0	480
		Tobacco	½ tola	..	0·16	1 10 0	100
		Potato	..	1 0 0	0·10	15 0 0	1,300
		English vegetables ..	..	20 packets	0·16	Rs. 40	..
Gaibandha-Padamshahar Union Board Farm.	Maulvi Abdur Rahman Mia.	*Aus* paddy	..	..	1	15 0 0	1,700
		Aman paddy ..	2 0 0	..	4	96 23 0	7,726
		Maize	0 10 0	..	0·33	250 0 0	20,000
		Jute	..	0 1 4	0·33	8 27 0	694
		Napier grass	4 0 0	..	0·33	515 0 0	5,200
		Cowpea	..	0 6 0	0·33	Green manure.	
		Gram	..	0 7 0	0·33	3 25 0	290
		Lentil	0 6 0	..	0·33	3 10 0	260
		Mustard	0 1 8	..	0·33	1 10 0	100
		Wheat	..	0 15 0	0·33	3 15 0	270
		Tobacco	½ tola	..	0·16	0 25 0	50
		Potato	..	1 0 0	0·10	28 0 0	2,240
		English vegetables ..	..	20 packets	0·16	Rs. 20	..
		Oats and peas ..	..	0 13 0	0·33	100 0 0	8,000
Kurigram Union Board Farm.	Maulvi Gayash Uddin..	*Aus* paddy	..	..	1	24 3 0	1,920
		Aman paddy ..	2 0 0	..	4	77 27 0	5,654
		Maize	0 10 0	..	0·33	195 0 0	15,600
		Jute	..	0 1 4	0·33	9 22 0	764
		Napier grass ..	4 0 0	..	0·33	100 0 0	8,000
		Cowpea	..	0 6 0	0·33	Green manure.	

Name of each Union Board Farm. 1	Name of owner. 2	Name of crop. 3	Quantity of seed supplied. By Government Farm. 4	By purchase. 5	Total area in acres sown under each crop. 6	Total outturn of each crop in both maunds and lbs. 7		Remarks (cause of failure and damage, etc., to be given in short.) 8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
		Gram	..	0 7 0	0·33	0 16 0	32	
		Lentil	0 6 0	..	0·33	3 31 0	802	
		Mustard	0 1 8	..	0·33	2 1 0	162	
		Wheat	..	0 15 0	0·33	4 6 0	342	
		Tobacco	½ tola	..	0·16	2 7 0	174	
		Potato	..	1 0 0	0 10	18 12 0	1,460	
		English vegetables ..	..	20 packets	0·16	Rs. 10.	..	
		Oats and peas ..	..	0 13 0	0·33	36 0 0	2,880	
Nilphamari-Kukhapara Union Board Farm.	Babu Haranath Biswas	*Aus* paddy	..	..	1	16 3 0	1,290	
		Aman paddy ..	2 0 0	..	4	8 0 0	640	
		Jute	..	0 1 4	0·33	2 0 0	160	
		Maize	0 10 0	..	0·33	200 0 0	1,600	
		Cowpea	..	0 6 0	0·33	Green manure.		
		Napier grass ..	4 0 0	..	0·33	220 0 0	17,600	
		Gram	..	0 7 0	0·33	0 5 0	10	
		Mustard	0 1 8	..	0·33	2 0 0	160	
		Wheat	..	0 15 0	0·33	1 5 0	90	
		Lentil	0 6 0	..	0·33	2 15 0	190	
		Potato	..	1 0 0	0·10	10 0 0	800	
		Tobacco	½ tola	..	0·16	0 30 0	60	
		English vegetables ..	..	20 packets	0·16	Rs. 20	..	
		Oats and peas ..	..	0 13 0	0·33	4 0 0	320	

Lalmanirhat-Saptana Union Board Farm.	Maulvi Mojhar Ali Pramanik.	*Aus* paddy	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
		Aman paddy ..	2 0 0	..	4	16 0 0	1,280	
		Jute	..	0 1 4	0·33	9 10 0	740	The outturn in 1940-41 was heavily affected by persistent drought.
		Maize	0 10 0	..	0·33	105 0 0	8,400	
		Cowpea	..	0 6 0	0·33	Green manure.		
		Napier grass ..	4 0 0	..	0·33	105 0 0	..	
		Gram	..	0 7 0	0·33	2 0 0	160	
		Lentil	0 6 0	..	0·33	3 5 0	210	
		Mustard	0 1 8	..	0·33	1 20 0	120	
		Wheat	..	0 15 0	0·33	3 0 0	200	
		Potato	..	1 0 0	0·10	15 22 0	1,244	
		English vegetables ..	..	20 packets	0·16	Rs. 50	..	
		Oats and peas ..	..	0 13 0	0·33	25 0 0	2,000	
		Tobacco	½ tola	..	0·16	0 16 0	32	
Anandanagar Union Board Farm.	Khandaker Maulvi Abdul Karim.	*Aus* paddy	..	..	1	24 0 0	1,920	
		Aman paddy ..	2 0 0	..	4	53 0 0	4,200	
		Jute	..	0 1 4	0·33	8 0 0	640	
		Maize	0 10 0	..	0·33	110 0 0	8,800	
		Cowpea	..	0 6 0	0·33	Green manure.		
		Napier grass ..	4 0 0	..	0·33	120 0 0	81,600	
		Gram	..	0 7 0	0·33	0 30 0	60	
		Lentil	0 6 0	0 6 0	0·33	3 10 0	260	
		Wheat	..	0 15 0	0·33	3 16 0	272	
		Mustard	0 1 8	..	0·33	2 20 0	200	
		Potato	..	1 0 0	0·10	15 0 0	1,200	
		Tobacco	½ tola	..	0·16	0 25 0	50	
		English vegetables ..	..	20 packets	0·16	Rs. 10	..	
		Oats and peas ..	..	0 13 0	0·33	140 0 0	11,200	

Name of each Union Board Farm.	Name of owner.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of each crop in both maunds and lbs.		Remarks (cause of failure and damage, etc., to be given in short.)
			By Government Farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
Mahimganj-Haripur Union Board Farm.	Babu Nani Gopal Majumdar.	*Aman* paddy ..	2 0 0	..	4	49 0 0	3,900	
		Napier grass ..	4 0 0	..	0·33	100 0 0	..	
		Gram	..	0 7 0	0·33	3 0 0	240	
		Lentil	0 6 0	..	0·33	2 0 0	160	
		Wheat	..	0 15 0	0·33	1 20 0	120	
		Mustard	0 1 8	..	0·33	1 0 0	80	
		Potato	..	1 0 0	0·10	6 0 0	480	
		Tobacco	½ tola	..	..	20 0 0	80	
		English vegetables ..	..	20 packets	0·16	Rs. 10	..	
		Oats and peas ..	..	0 13 0	0·33	17 0 0	1,440	
Ulipur-Kaludanga Union Board Farm.	Babu Nalini Kanta Chakravarty.	*Aman* paddy ..	2 0 0	..	4	21 35 0	1,750	
		Napier grass	4 0 0	..	0·33	110 0 0		
		Gram	..	7	0·33	1 35 0	150	
		Lentil	0 6 0	..	0·33	1 32 0	144	
		Wheat ..	..	0 15 0	0·33	1 10 0	100	
		Oats and peas ..	..	0 13 0	0·33	30 0 0	2,400	
		Mustard	0 1 8	..	0·33	1 20 0	120	
		Potato	..	1 0 0	0·10	8 8 0	656	
		Tobacco	½ tola	..	0·16	0 25 0	50	
		English vegetables ..	..	20 packets	0·61	Rs. 10	..	

			English vegetables ..	..	20 packets	0·61	Rs. 10	..	
Domar-Bargari Board Farm.	Union	Babu Shashi Mohan Barma.	*Aman* paddy ..	[illegible]	..	4	[illegible]	[illegible]	
			Napier grass ..	4 0 0	..	0·33	120 0 0	..	
			Gram	..	0 7 0	0·33	1 36 0	332	
			Wheat	..	0 15 0	0·33	2 35 0	280	
			Lentil	0 6 0	..	0·33	2 0 0	160	
			Mustard	0 1 8	..	0·33	1 18 0	116	
			Oats and peas ..	..	0 13 0	0·33	5 0 0	400	
			Potato	..	1 0 0	0·10	7 20 0	600	
			Tobacco	¼ tola	..	0·16	2 30 0	220	
			English vegetables ..	..	20 packets	0·16	Rs. 10	..	
Saidpur-Barakuti Board Farm.	Union	Maulvi Md. Khairat Hossain.	*Aman* paddy ..	2 0 0	..	4	120 0 0	9,600	
			Napier grass ..	4 0 0	..	0·33	120 0 0	..	
			Gram	..	0 7 0	0·33	..	..	Damage due to drought.
			Wheat	..	0 15 0	0·33	..	..	Ditto.
			Lentil	0 6 0	..	0·33	1 20 0	120	
			Mustard	0 1 8	..	0·33	2 0 0	160	
			Oats and peas ..	..	0 13 0	0·33	..	..	Damage due to drought.
			Potato	..	1 0 0	0·10	12 0 0	960	
			Tobacco	½ tola	..	0·16	0 10 0	20	
			English vegetables ..	..	20 packets	0·16	Rs. 15	..	

The results of cultivation in the Demonstration Centres of Rangpur districı during 1940-41.

Total number of Demonstration Centres in the district.	Total number of cultivators dealt with.	Name of crop.	Quantity of seeds supplied.				Total area in acres sown under each crop.	Total outturn of each crop.		Remarks (cause of failure and damage, etc.).
			From Government Farm.		By purchase.					
1	2	3	4		5		6	7		8
			Md. sr. ch.	Lbs.	Md. sr. ch.	lbs.		Md. sr. ch.	lbs.	
		Khariff.								
33	1,815	*Aus* paddy ..	42 0 0	3,360	..	..	42·00	746 37 0	59,754	The outturn is much below normal due to scarcity of rain.
		Aman paddy	99 0 0	7,920	..	..	264·00	2,051 27 0	164,134	
		Joar ..	..	..	4 8 0	336	7·00	2,253 0 0	180,240	
		Maize ..	5 10 0	420	..	..	7·00	3,326 0 0	258,880	
		Cowpea ..	..	..	15 30 0	1,260	18·33	Green manure	..	
		Napier grass	120 0 0	9,600	..	..	11·00	2,190 0 0	175,200	
		Rabi.								
		Gram ..	11 22 0	924	..	..	22·00	110 0 0	8,800	
		Lentil ..	9 36 0	792	..	..	22·00	149 30 0	11,980	
		Wheat ..	..	..	12 15 0	990	11·00	146 26 0	11,732	
		Mustard ..	2 19 0	198	..	..	22·00	104 38 0	8,396	
		Peas ..	5 31 0	2,162	..	..	11·00	58 21 0	4,682	
		Peas and oats ..	..	..	10 29 0	858	11·00	2,338 20 0	187,080	
		Potato ..	..	..	33 0 0	2,640	3·63	264 0 0	21,120	
		Tobacco ..	66 tolas	..	..	..	22·00	144 30 0	11,580	
		English vegetables	..	..	660 pkts.	..	5·50	Rs. 530	..	

Results of Demonstration Centres of Rangpur district for the year 1940-41.

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government Farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks (cause of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
3 Demonstration Centres under Agricultural Demonstrator, Sadar.	18	*Aus* paddy ..	6 0 0	..	6	99 13 0	7,946	
	24	*Aman* paddy ..	9 0 0	..	24	98 0 0	7,840	
	12	Maize ..	0 30 0	..	1	303 0 0	24,240	Fodder.
	12	Joar	..	0 24 0	1	245 0 0	19,600	Do.
	15	Cowpea ..	..	2 10 0	5	Green manure.	..	
	12	Napier grass ..	12 0 0	..	1	316 0 0	25,280	The outturn of 1940-41 was heavily affected by the persistent drought.
	12	Gram	1 2 0	..	2	5 20 0	440	
	12	Lentil ..	0 36 0	..	2	16 0 0	1,200	
	12	Mustard ..	0 9 0	..	2	9 6 0	742	
	6	Wheat ..	..	1 5 0	1	18 4 0	1,448	
	6	Peas	..	0 21 0	1	6 12 0	504	
	6	Oats and peas ..	..	0 39 0	1	393 0 0	31,440	Fodder.
	6	Potato ..	..	3 0 0	0·33	24 20 0	1,960	
	6	English vegetables	..	60 pkts.	0·50	Rs. 140	..	
	24	Tobacco ..	6 tolas	..	2	13 0 0	1,040	

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied.		Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks (cause of failure and damage, etc., to be given in short).
			From Government Farm.	By purchase.				
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
3 Demonstration Centres under Agricultural Demonstrator, Mithapukur.	18	*Aus* paddy ..	6 0 0	..	6	82 36 0	6,632	
	48	*Aman* paddy ..	9 0 0	..	24	198 34 0	15,908	
	12	Maize ..	0 30 0	..	1	495 0 0	39,600	Fodder.
	12	Joar ..	..	0 24 0	1	524 0 0	41,920	Do.
	15	Cowpea ..	..	0 30 0	5	Green manure.	..	
	12	Napier grass ..	12 0 0	..	1	440 0 0	33,600	
	12	Gram ..	1 2 0	..	2	6 38 0	556	Fodder.
	12	Lentil ..	0 36 0	..	2	9 0 0	720	
	6	Wheat ..	..	1 5 0	1	17 5 0	1,370	
	12	Mustard	0 9 0	..	2	14 24 0	1,168	
	6	Peas ..	..	0 21 0	1	6 34 0	548	
	12	Oats and peas ..	..	0 39 0	1	239 0 0	19,040	Fodder.
	6	Potato ..	..	3 0 0	0·33	29 8 0	2,336	
	24	Tobacco ..	6 tolas	..	2	6 25 0	530	
	6	English vegetables	..	60 pkts.	0·50	Rs. 60	..	

3 Demonstration Centres under Agricultural Demonstrator, Annadanagar.	18	*Aus* paddy ..	6 0 0	..	6	[illegible]	[illegible]	
	48	*Aman* paddy ..	9 0 0	..	24	205 0 0	16,400	
	12	Joar ..	..	0 24 0	1	418 0 0	33,520	Fodder.
	12	Maize ..	0 30 0	..	1	490 0 0	39,200	Do.
	15	Cowpea ..	..	2 10 0	5	Green manure.	..	
	12	Napier grass ..	12 0 0	..	1	518 0 0	41,440	Fodder.
	12	Gram ..	1 2 0	..	2	5 30 0	460	
	12	Lentil ..	0 36 0	..	2	18 15 0	1,470	
	6	Wheat ..	..	1 5 0	1	16 10 0	1,300	
	12	Mustard ..	0 9 0	..	2	15 10 0	1,220	
	6	Peas ..	..	0 21 0	1	3 12 0	264	
	6	Oats and peas ..	..	0 39 0	1	370 0 0	29,600	
	6	Potato ..	..	3 0 0	0·33	18 0 0	1,480	
	24	Tobacco ..	6 tolas	..	2	69 0 0	5,520	
	6	English vegetable	..	60 pkts.	0·50	Rs. 30	..	
3 Demonstration Centres under Agricultural Demonstrator, Gaibandha.	18	*Aus* paddy ..	6 0 0	..	6	89 30 0	7,420	
	48	*Aman* paddy ..	9 0 0	..	24	382 0 0	30,560	
	12	Joar ..	..	0 24 0	1	137 0 0	10,960	Fodder.
	12	Maize ..	0 30 0	..	1	218 0 0	17,440	Do.
	15	Cowpea ..	..	2 10 0	5	Green manure.	..	

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government Farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks (cause of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
	12	Napier grass ..	12 0 0	..	1	340 0 0	27,200	Fodder.
	12	Gram ..	1 2 0	..	2	20 12 0	1,624	
	12	Lentil ..	0 36 0	..	2	17 7 0	1,454	
	6	Wheat ..	..	1 5 0	1	18 0 0	1,520	
	12	Mustard ..	0 9 0	..	2	4 7 0	334	
	6	Peas ..	..	0 21 0	1	4 34 0	338	
	6	Oats and peas	..	0 39 0	1	258 0 0	20,640	Fodder.
	6	Potato ..	..	3 0 0	0·33	19 30 0	1,580	
	24	Tobacco ..	6 tolas	..	2	8 25 0	690	
	6	English vegetables	..	60 pkts.	0·50	Rs. 60	..	
3 Demonstration Centres under Agricultural Demonstrator, Nilphamari.	18	*Aus* paddy ..	6 0 0	..	6	96 0 0	7,680	
	48	*Aman* paddy ..	9 0 0	..	24	308 0 0	24,640	
	12	Joar ..	..	0 24 0	1	320 0 0	25,600	Fodder.
	12	Maize ..	0 30 0	..	1	494 0 0	39,520	Do.

	12	Napier grass ..	12 0 0	..	1	418 0 0	25,440	Fodder.
	12	Gram ..	1 2 0	..	2	10 16 0	832	
	12	Lentil ..	0 36 0	..	2	16 10 0	1,300	
	6	Wheat ..	..	1 5 0	1	17 12 0	1,384	
	12	Mustard ..	0 9 0	..	2	6 30 0	540	
	6	Peas ..	..	0 21 0	1	3 20 0	280	
	6	Oats and peas ..	..	0 39 0	1	210 0 0	16,800	
	6	Potato ..	..	3 0 0	0·33	24 10 0	1,940	
	24	Tobacco ..	6 tolas		2	5 30 0	460	
	6	English vegetables ..	..	60 pkts.	0·50	Rs. 40.	..	
3 Demonstration Centres under Agricultural Demonstrator, Kurigram.	18	*Aus* paddy ..	6 0 0	..	6	143 27 0	11,494	
	48	*Aman* paddy ..	9 0 0	..	24	383 0 0	27,440	
	12	Joar	..	0 24 0	1	291 0 0	23,280	Fodder.
	12	Maize ..	0 30 0	..	1	383 0 0	27,440	Do.
	15	Cowpea ..	..	2 10 0	5	Green manure.		Do.
	12	Napier grass ..	12 0 0	..	1	260 0 0	24,800	
	12	Gram ..	1 2 0	..	2	2 20 0	300	
	12	Lentil ..	0 36 0	..	2	17 11 0	1,382	
	6	Wheat ..	..	1 5 0	1	9 16 0	752	
	12	Mustard ..	0 9 0	..	2	3 16 0	1,072	

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government farm.	By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks (cause of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
	6	Peas	..	0 21 0	1	4 24 0	368	The outturn in 1940-41 was heavily affected by persistent drought.
	6	Oats and peas ..	..	0 39 0	1	80 0 0	6,400	
	6	Potato ..	..	3 0 0	0·33	17 30 0	1,420	
	24	Tobacco ..	6 tolas	..	2	7 5 0	570	
	6	English vegetables ..	..	60 pkts.	0·50	Rs. 30	..	
3 Demonstration Centres under Agricultural Demonstrator, Lalmanirhat.	12	*Aus* paddy ..	6 0 0	..	6	81 19 0	3,314	
	40	*Aman* paddy ..	9 0 0	..	24	56 33 0	4,546	
	12	Joar	..	0 24 0	1	347 0 0	27,760	Fodder.
	12	Maize ..	0 30 0	..	1	853 0 0	68,240	Do.
	15	Cowpea ..	..	2 10 0	5	Green manure.		
	12	Napier grass ..	12 0 0	..	1	510 0 0	..	
	12	Gram ..	1 2 0	..	2	9 38 0	796	
	12	Lentil ..	0 36 0	..	2	11 0 0	880	
	6	Wheat ..	..	1 5 0	1	8 5 0	650	
	12	Mustard ..	0 9 0	..	2	11 30 0	940	

	12	Mustard ..	0 9 0	..	2	11 30 0	940	
	6	Oats and peas ..	..	0 39 0	1	103 0 0	8,240	Fodder.
	6	Potato ..	..	3 0 0	·33	45 5 0	3,610	
	20	Tobacco ..	6 tolas	..	2	14 5 0	1,130	
	6	English vegetables	..	60 pkts.	·50	Rs. 50	..	
3 Demonstration Centres under Agricultural Demonstrator, Jute Committee, Saidpur.	34	*Aman* paddy ..	9 0 0	..	24	11·1 0 0	..	
	12	Napier grass ..	12 0 0	..	1	320 0 0	..	
	12	Gram	1 2 0	..	2	10 16 0	..	
	12	Lentil	0 36 0	..	2	8 16 0	..	
	6	Wheat ..	..	1 5 0	1	10 16 0	..	
	12	Mustard ..	0 9 0	..	2	4 10 0	..	
	6	Peas	..	0 21 0	1	5 0 0	..	
	6	Oats and peas ..	..	0 39 0	1	836 0 0	..	
	6	Potato ..	..	3 0 0	0·33	18 38 0	..	
	20	Tobacco ..	6 tolas	..	2	6 0 0	..	
	6	English vegetables ..	..	60 pkts.	·050	Rs. 45	..	
3 Demonstration Centres under Agricultural Demonstrator, Jute Committee, Domar.	40	*Aman* paddy ..	9 0 0	..	24	106 20 0	8,520	
	12	Napier grass ..	12 0 0	..	1	305 0 0	..	
	12	Gram	1 2 0	..	2	11 12 0	904	
	12	Lentil	0 36 0	..	2	13 20 0	1,080	
	6	Wheat ..	..	1 2 0	1	10 26 0	852	

Total number of Demonstration Centres under each Agricultural Demonstrator.	Total number of cultivators dealt with.	Name of crop.	Quantity of seed supplied. From Government Farm.	Quantity of seed supplied. By purchase.	Total area in acres sown under each crop.	Total outturn of each crop in both mds. and lbs.		Remarks (cause of failure and damage, etc., to be given in short).
1	2	3	4	5	6	7		8
			Md. sr. ch.	Md. sr. ch.		Md. sr. ch.	lbs.	
	12	Mustard ..	0 9 0	..	2	12 23 0	1,006	
	6	Peas	..	0 21 0	1	5 32 0	464	
	6	Oats and peas ..	..	0 39 0	1	24 20 0	1,760	
	6	Potato ..	..	3 0 0	0·33	35 31 0	2,862	
	20	Tobacco ..	6 tolas.	..	2	5 10 0	420	
	6	English vegetables	..	60 pkts.	0·50	Rs. 30	..	
Demonstrator Centres under Agricultural Demonstrator, Jute Committee, Mahimganj.	44	*Aman* paddy ..	9 0 0	..	24	109 0 0	9,120	
	12	Napier grass ..	12 0 0	..	1	298 0 0	..	
	12	Gram	1 2 0	..	2	3 18 0	260	
	12	Lentil	0 36 0	..	2	14 16 0	1,152	
	6	Wheat ..	..	1 2 0	1	14 30 0	1,180	
	12	Mustard ..	0 9 0	..	2	6 12 0	504	
	6	Peas	..	0 21 0	1	6 0 0	480	
	6	Oats and peas ..	..	0 39 0	1	217 0 0	17,360	
	6	Potato ..	..	3 0 0	0·33	9 12 0	794[illegible]	

	18	Tobacco ..	6 tolas	..	2	3 20 0	260
	6	English vegetables	..	60 pkts.	0·50	Rs. 15.	..
3 Demonstration Centres under Agricultural Demonstrator, Jute Committee, Ulipur.	36	*Aman* paddy ..	9 0 0	..	24	94 0 0	7,520
	12	Napier grass ..	12 0 0	..	1	300 0 0	..
	12	Gram	1 2 0	..	2	11 0 0	880
	12	Lentil	0 36 0	..	2	11 30 0	940
	6	Wheat ..	..	1 5 0	1	8 16 0	672
	12	Mustard ..	0 9 0	..	2	6 30 0	540
	6	Peas	..	0 21 0	1	3 15 0	270
	6	Oats and peas ..	..	0 39 0	1	108 0 0	8,640
	6	Potato ..	..	3 0 0	0·33	21 8 0	1,696
	16	Tobacco ..	6 tolas	..	2	5 30 0	460
	6	English vegetables ..	..	60 pkts.	0·50	Rs. 30	..

APPENDIX III.

Detailed list of some private farm and seed growers in the Northern Circle during 1940-41.

Name and address of the owner.	Variety of seed grown.	Area in acres.	Quantity of seed raised.
1	2	3	4
			Md. sr. ch.
Rajshahi.			
1. Md. Lal Mohammad Mondal, Madhupur.	Jute, C. G. ..	·50	5 0 0
	Marichbuty *aus* ..	·66	7 20 0
	Paspai ..	2·66	48 0 0
	Kasiapanja ..	4·66	65 0 0
	Jhingasail ..	2·66	14 0 0
	Co. 213, sugarcane ..	4	Sale not yet complete.
	Lentil ..	1	8 0 0
2. Md. Appel Mandal, Char Serampur	Co. 213, sugarcane ..	1	46 0 0 Gur.
	Wheat ..	·50	Not yet ready.
	Gram (S. 4) ..	2·33	Ditto.
	Lentil (5) ..	·66	5 0 0
3. Maulvi Mahammad Mandal, Sonaikandi.	Marichbuty ..	2	18 0 0
	Dudsar ..	1·66	22 0 0
	Indrasail ..	·66	10 0 0
	Gram (S. 4) ..	·33	Not yet ready.
	Wheat (P. 52) ..	·33	Ditto.
4. Babu Bhola Nath Paul, Nabaganga	Marichbuty ..	·66	8 0 0
	Paspai ..	1·66	15 0 0
	Indrasail ..	1·33	21 0 0
	Dudsar ..	·66	10 0 0
	Gram (S. 4) ..	1	Not yet ready.
	Lentil (5) ..	1	5 0 0
	Wheat ..	·33	Not yet ready.
	Tori (No. 7) ..	·66	4 0 0
5. Maulvi Palnuddin Sirkar, Bhatupara.	Indrasail *aman* ..	26·33	236 0 0
	Dudsar *aman* ..	30	250 0 0
6. Keramatulla Shaha, Bhatupara	Ditto ..	6	71 0 0
7. Hazi Dodai Pramanik, Bhatupara	Indrasail *aman* ..	3·33	45 0 0
	Dudsar *aman* ..	4	46 0 0
8. Ahmed Mandal, Rasulpur ..	Indrasail *aman* ..	10·33	100 0 0
	Dudsar *aman* ..	11·66	100 0 0
9. Kasimuddin Shah, Tikal ..	Indrasail *aman* ..	10	85 0 0
	Dudsar *aman* ..	12	90 0 0
10. Sukruddin Mandal, Tikal ..	Indrasail *aman* ..	8·33	76 0 0
	Dudsar *aman* ..	5·33	33 0 0

Name and address of the owner.	Variety of seed grown.	Area in acres.	Quantity of seed raised.
1	2	3	4
			Md. sr. ch.
[illegible] Bhujan Mahato, Tirinda ..	Indrasail *aman* ..	10	76 0 0
	Dudsar *aman* ..	8 ·33	48 0 0
[illegible] Babu Adya Nath Majumder, Godagari.	Indrasail *aman* ..	23 ·66	200 0 0
	Dudsar *aman* ..	26 ·66	210 0 0
[illegible] Ahmed Hazi, Goadagari ..	Indrasail *aman* ..	13 ·33	100 0 0
	Dudsar *aman* ..	12 ·33	96 0 0
Naogaon.			
1. Mirtala Farm of Babu Jinendra Bhusan Bhattacharya, P. O. Abdulpur, Rajshahi.	Sugarcane, Co. 213	43	5 lakhs of seed cuttings.
	Marichbuty *aus*, P × S(8) *aus*, Dharial).		15 0 0
	Aus, D × L *aus*, wheat (P. 52), oats (Pusa).		10 0 0
	Matihari tobacco ..		10 tolas.
2. Kholabaria Farm of Maulvi Jahangir Khan Chowdhury, P. O. Natore, Village. Kholabaria.	Indrasail and Dudsar *aman* paddy.	40	200 0 0
3. Maulvi Moslem Mandal, Village Harishpur, P. O. Natore.	Dharial *aus* paddy ..	10 ·0	10 0 0
	Dudsar *aman* paddy ..		15 0 0
	Rai (5) and tori (7) ..		7 0 0
	Gram (S. 4) and lentil		5 0 0
4. Maulvi Mafizuddin Pramanik, Razakpur, Naogaon.	Dharial *aus* ..	2 ·0	5 0 0
5. Bejoy Chandra Gossain, Enayetpur, Mahadevpur.	Ditto ..	7 ·0	12 0 0
6. Jogeswar Mandal, Dohati, Mahadevpur.	Ditto ..	3 ·0	5 0 0
7. Maulvi Rased Ali Khan, Harishpur, Natore.	Dudsar *aman* ..	2 ·0	5 0 0
	Dharial *aus* ..		6 0 0
	Rabi seeds ..		5 0 0
8. Maulvi Chamu Mandal, Harishpur, Natore.	Dudsar and Indrasail *aman*	3 ·0	15 0 0
9. Maulvi Meheruddin Pramanik, Natore.	Indrasail and Dudsar *aman*.	4 ·0	20 0 0
10. Maulvi Kasim Pramanik, Harishpur, Natore.	Ditto ..	3 ·0	10 0 0
11. Maulvi Sonaulla Pramanik, Natore	Dudsar *aman* ..	2 ·0	7 0 0
12. Maulvi Tejamulla Pramanik, Natore.	Indrasail and Dudsar *aman*.	3 ·0	10 0 0
13. Maulvi Sujan Pramanik, Natore	Ditto ..	3 ·0	12 0 0
14. Babu Sudhir Kumar Mondal, Natore.	Ditto ..	5 ·0	15 0 0
15. Maulvi Pocha Mondal, Natore ..	Ditto ..	2 ·0	7 0 0
16. Maulvi Fazar Ali Pramanik, Natore	Ditto ..	2 ·0	5 0 0
17. Maulvi Nurmahammad Mondal, Mosherpur, Naogaon.	Dharial *aus* ..	3 ·0	7 0 0
18. Maulvi Babar Ali Sardar, Mohanpur, Naogaon.	Ditto ..	3 ·0	6 0 0
19. Maulvi Abdul Karim Tarafder, Mohonpur, Naogaon.	Ditto ..	5 ·0	12 0 0

Name and address of the owner.	Variety of seed grown.	Area in acres.	Quantity of seed raised.
1	2	3	4
			Md. sr. ch.
20. Maulvi Aminuddin Mondal, Kadoa, Naogaon.	Dudsar *aman* .. *Rabi* seeds—Gram .. Mustard and lentil ..	12·0	37 0 0 / 10 0 0
21. Maulvi Samiruddin Ahmed, Jagatsingpur, Naogaon.	Dudsar *aman* .. *Rabi* seeds—Gram Mustard andlentil ..	17·0	50 0 0 / 10 0 0
22. Jatindra Nath Sarkar, Baghari, Naogaon.	Gram, lentil and mustard.	3·0	10 0 0
23. Maulvi Mofiz Fakir, Sultanpur, Naogaon.	Ditto	4·0	7 0 0
24. Benode Chandra Sarker, Par-Naogaon.	Mustard (Tori No. 7) ..	4·0	6 0 0
Malda.			
1. Maulvi Latif Hossain, Lakhipur Farm.	Dharial *aus* paddy ..	5·00	75 0 0
	Mustard (Tori No. 7) ..	26·66	14 0 0 Crop failed due to prolonged drought.
	Wheat (P. 52) ..	6·66	60 0 0
2. Babu Dharani Dhar Maitra, Surala Farm.	Indrasail and Dudsar *aman*.	17·00	200 0 0
3. Babu Khirode Chakraborty, owner, Nimua Farm.	Dharial *aus* paddy ..	1·00	14 0 0
	Mustard (Tori No. 7) ..	3·33	15 0 0
4. Md. Musa Mistri, Srishdanga Farm	Sugarcane (Co. 421) ..	2·00	110 0 0 Gur.
	Wheat (P. 52) ..	1·00	12 0 0
5. Babu Iswarlal Ghosh, Jatradanga Farm.	Sabaur gram ..	1·00	12 0 0
	Mustard (Tori No. 7)	3·00	15 0 0
Dinajpur.			
1. Khan Sahib Amiruddin Sarker, Rohea, P. O. Poteswari, Dinajpur.	Departmental paddy ..	300	1,500 0 0
2. Maulvi Afiruddin Sarker, Dhantala, Setabganj.	Ditto ..	200	800 0 0
3. Rai Sahib J. Shaha, Birampur ..	Ditto ..	400	1,000 0 0
4. Babu Indu Bhusan and his brothers, P. O. Poteswari, Birampur.	Ditto ..	100	500 0 0
5. Babu Narayan Chandra Chowdhury dhury, Kinshalgram, Birampur.	Ditto ..	100	400 0 0
Pabna.			
1. Arshed Ali Shaikh, Ishurdi ..	Dharial *aus* paddy ..	3·33	20 0 0
2. Rahatali Biswas, Ishurdi ..	Ditto ..	2·00	10 0 0
3. Mafiz, P. K., Ishurdi ..	Tilackkachary *aman* ..	2·00	10 0 0
4. Abuli Khan, Ataikula ..	Dharial *aus* paddy ..	3·00	25 0 0
5. Deraj P. K. Ataikula ..	Ditto ..	3·00	10 0 0
6. Makhan Saha, Ataikula ..	Ditto ..	4·00	20 0 0
7. Gopal Das, Ataikula ..	Ditto ..	3·00	10 0 0
8. Rafik P. K., Ataikula ..	Ditto ..	3·00	15 0 0
9. Satish Chandra Saha, Ataikula ..	Ditto ..	4·00	14 0 0
10. Moizuddin Biswas, Ataikula ..	Tilakkachary *aman* ..	5·00	25 0 0
11. Ajij, P. K., Ataikula ..	Dharial *aus* paddy ..	4·00	20 0 0

Name and address of owner.	Variety of seed grown.	Area in acres.	Quantity of seed raised.
1	2	3	4
			Md. sr. ch.
12. Abdul Hamid, Mirkutia ..	Dharial *aus* paddy ..	5·00	25 0 0
13. Md. Chandi Mian, Mirkutia ..	Ditto ..	5·00	24 0 0
14. Hojal Shaikh, Mirkutia ..	Ditto ..	2·00	22 0 0
15. Ashan, S. K., Mirkutia ..	Ditto ..	6·00	30 0 0
16. Paulto Kumory, Serajganj ..	Tilakkachary *aman* ..	4·00	20 0 0
17. Md. Fazar Ali, Serajganj ..	Dharial *aus* paddy ..	3·00	10 0 0
18. Degendra Nath Pathak, Serajganj	Ditto ..	5·00	20 0 0
19. Minatali Talukdar, Serajganj ..	Ditto ..	6·00	26 0 0
20. Osman Ghan Talukdar, Serajganj	Ditto ..	6·00	24 0 0
21. Bakat Ram, Ishurdi ..	Wheat, Pusa ..	3·00	15 0 0
Bogra.			
1. Babu Kumud Chandra Chowdhury P. O. Panchbibi.	Indrasail paddy ..	50	Not known.
2. Maulvi Nasiruddin Mondal, P. O. Panchbibi.	Ditto ..	8·33	Ditto.
3. Maulvi Kalimuddin Sarker, P. O. Panchbibi.	Bhasamanik ..	8·00	Ditto.
4. Maulvi Mukbul Hosain, village Nurpur, P. O. Bogra Parbati.	Ditto ..	3·33	50 0 0
	Kumari *aus* ..	2·00	30 0 0
5. Md. Hatemuddin Pramanik P. O. Mokamtala, Village Amjani.	Bhasamanik ..	6·66	120 0 0
	Latisail ..	1·66	40 0 0
	Kumari *aus* ..	1·00	17 0 0
	Dharial *aus* ..	1·66	40 0 0
	Lentil ..	·66	6 20 0
	Gram ..	1·00	11 2 0
	Wheat ..	·33	3 10 0
Rangpur.			
1. Babu Bhupendra Mohan Roy Chowdhury, Tepa Madhupur, Rangpur.	Indrasail and Bhasamanik	30	1,000 0 0
2. Babu Golekeswar Bhattacherjee, Itakumari, Rangpur.	Ditto ..	10	300 0 0
3. Dr. Golam Goach, Burirhat, Rangpur.	Ditto ..	5	150 0 0
4. Babu Shasi Bhusan Ganguly, Gopalpur, Rangpur.	Ditto ..	2	70 0 0
Jalpaiguri.			
1. Babu Prolhad Agarwala, Garalbari	Bhasamanik ..	15·00	225 0 0
	Dharial ..	1·00	..
2. Babu Rajmohan Roy, Dhupguri	Charnak ..	3·00 25·00	36 0 0
3. Indu Bhusan Chatterjee, Binnaguri	Indrasail ..	17·00	255 0 0
4. Babu Murari Mohan Thakur, Jatanpukri.	Charnak ..	1·00	12 0 0
	Dudsar ..	10·00	145 0 0

Name and address of the owner.	Variety of seed grown.	Area in acres.	Quantity of seed raised.
1	2	3	4
			Md. sr. ch.
5. Maulvi Abdus Sobhan, Falakata ..	Dharial ..	8·00	100 0 0
	Dudsar ..	15·00	277 0 0
	Indrasail ..	10·00	170 0 0
6. Keramat Ali, Tikatuli ..	Dudsar ..	4·00	62 0 0
	Bhasamanik ..	0·33	6 0 0
	Dharial ..	6·00	120 0 0
	Kumari ..	1·00	20 0 0
	Latisail ..	2·66	40 0 0
7. Maulvi Hossain Ali Ahmad, Maynaguri.	Dudsar ..	2·00	36 0 0
	Latisail ..	1·00	15 0 0
	Dharial ..	2·00	34 0 0
8. Zamiruddin Ahmad, Maynaguri ..	Dudsar ..	1·00	4 0 0
	Dharial ..	0·66	14 0 0
9. Nurul Mohammad, Maynaguri ..	Dudsar ..	1·50	21 0 0
	Dharial ..	0·33	5 0 0
10. Afseruddin Ahmed, Maynaguri ..	Dudsar ..	2·00	35 0 0
11. Ramkinkar Nandy, Panchagarh	Dudsar ..	4·00	55 0 0
	Dharial ..	1·00	16 0 0
12. Bangu Mohammad, Panchagaon	Dudsar ..	1·00	17 0 0
	Latisail ..	1·00	17 0 0
13. Hemanta Barman, Panchagaon ..	Dudsar ..	1·00	18 0 0
	Dharial ..	1·00	16 0 0
14. Rashawanath Barman, Panchagarh	Dudsar ..	1·50	26 0 0
	Dharial ..	1·00	17 0 0
15. Darajuddin Ahmad, Panchagarh	Dudsar ..	1·00	57 0 0
	Latisail ..	3·00	55 0 0
	Dharial ..	3·00	50 0 0
16. Rajendra Sarker, Alipur Duars ..	Dudsar ..	10·00	184 0 0
	Latisail ..	..	..

APPENDIX IV.

...tement showing places and number of lectures delivered and average number of cultivators attending lectures in each place during 1940-41 in the Northern Circle.

Place where lecture delivered.	Number of people attending the lecture.	Number of lectures delivered.		Remarks.
		Number of unillustrated lectures (without lantern slides).	Number of illustrated lectures (with magic lantern or cinema).	
1	2	3	4	5
Dinajpur.				
...mathapur Exhibition ground.	4,000	1	Nil	
Ditto ..	2,000	1	Nil	
...iganj Dak Bunglow	1 000	Nil	1	
Ditto ..	700	Nil	1	
...ngpur Maharaja Girija Nath H. E. School.	60	1	Nil	Rural Reconstruction lecture.
...najpur Id Exhibition ground.	600	1	Nil	
Ditto ..	500	1	Nil	
...tabganj Sugarcane Grower's Union's Conference.	3,000	1	Nil	With Subdivisional Officer, Thakurgaon, as President.
...taghanj Exhibition ground.	1,000	1	Nil	
Ditto ..	3,000	1	Nil	Ditto.
Ditto ..	5,000	1	Nil	
...aripore Exhibition ground.	3,000	1	Nil	Ditto.
Ditto ..	1,000	1	Nil	
Naogaon.				
...anda	400	..	1	By District Agricultural Officer, Naogaon.
...ahadebpur ..	500	1	..	Ditto.
Ditto ..	700	..	1	Ditto.
...trai	300	..	1	Ditto.
Ditto ..	700	1	..	Ditto.

Place where lecture delivered.	Number of people attending the lecture.	Number of lectures delivered.		Remarks.
		Number of unillustrated lectures (without lantern slides).	Number of illustrated lectures (with magic lantern or cinema).	
1	2	3	4	5
Jagadishpur ..	600	1	..	By District Agricultural Officer, Naogaon.
Malanchi ..	400	1	..	Ditto.
Lalpur ..	400	1	..	Ditto.
Ditto ..	500	..	1	Ditto.
Nator Exhibition Av. ground.	3,000	1	2	Ditto.
Gopalpur Exhibition ground.	5,000 to 7,000	2	1	Ditto.
Dohali	200	1	..	By three Agricultural Demonstrators.
Enayetpur ..	250	1	..	
Joanpur ..	300	1	..	
Jagadishpur	200	1	..	
Nathurapur ..	100	1	..	
Khalsi	150	1	..	
Boalia	100	1	..	
Gurudaspur ..	300	1	..	
Nator	600	1	..	
Lalpur	300	1	..	
Singra	400	1	..	
Bogra.				
Barhatta ..	30	1	..	
Gorfatapur	40	1	..	
Baluapara ..	40	1	..	
Sherpur Dak bungalow	200	1	..	
Joanpur	25	1	..	
Mokamtala ..	800	..	1	
Ditto ..	700	..	1	

Place where lecture delivered.	Number of people attending the lecture.	Number of lectures delivered.		Remarks.
		Number of unillustrated lectures (without lantern slides).	Number of illustrated lectures (with magic lantern or cinema).	
1	2	3	4	5
...rikhali ..	300	1	..	
...alsa	1,000	..	1	
...ypurhat ..	200	1	..	
...ramala hat ..	300	1	..	
...gani	100	1	..	
...gram hat ..	200	1	..	
...lla	100	.. 1	..	
...ril	50	1	..	
...niartair hat ..	200	1	..	
...alishakandi ..	50	1	..	
...uphatta ..	100	1	..	
...rdhankuthi ..	50	1	..	
...anpur ..	75	1	..	
...marpathalia ..	40	1	..	
...rai	30	1	..	
...mnat	40	1	..	
...angi hat ..	60	1	..	
...ha hat ..	75	1	..	
...ijatpur ..	50	1	..	
...malganj ..	300	1	..	
...ugahata ..	100	1	..	
...Kalai	50	1	..	
...takhala ..	200	1	..	
...aimujahat ..	200	1	..	
...Durgahat ..	100	1	..	
...Anantabala ..	20	1	..	

Place where lecture delivered.	Number of people attending the lecture.	Number of lectures delivered. Number of unillustrated lectures (without lantern slides).	Number of illustrated lectures (with magic lantern or cinema).	Remarks.
1	2	3	4	5
Durgahata ..	800	..	1	
Ditto ..	600	..	1	
Ditto ..	400	1	..	
Rajshahi.				
Puthia	100	1	..	Jute Regulation meeting.
Mohanpur ..	100	1	..	Ditto.
Charghat ..	200	1	..	Ditto.
Bagha	100	1	..	Ditto.
Yusufpur ..	100	1	..	Ditto.
Jalpaiguri.				
Maynaguri ..	200	2	..	
Patgram ..	250	2	..	
Maynaguri Farm ..	200	..	1	
Changhara Alipur Duars.	350	..	1	
Jalpesh	650	1	..	
Pabna.				
Hatigara ..	600	2	..	
Ullapara ..	400	2	..	
Mirkutia ..	300	3	..	
Sthal	200	1	..	
Debattar ..	150	2	..	
Dupkhola ..	200	1	..	
Ataikhula ..	200	2	..	
Malanchi ..	200	2	..	
Dapania ..	200	3	..	

Place where lecture delivered.	Number of people attending the lecture.	Number of lectures delivered.		Remarks.
		Number of unillustrated lectures (without lantern slides).	Number of illustrated lectures (with magic lantern or cinema).	
1	2	3	4	5
Serajganj ..	300	3	..	
Sujanagar ..	200	1	..	
Saniardiar ..	300	2	..	
Kristiraliar ..	100	1	..	
Ishurdi ..	100	2	..	
Charmarkamari ..	100	1	..	
Raghunathpur ..	100	1	..	
Khaga ..	100	1	..	
Bisadpur ..	200	1	..	
Uttarchak ..	200	1	..	
Pabna Sadar (Exhibition).	1,200	15	..	
Kazipur ..	200	2	..	
Chatmohar ..	200	2	..	
Shahzadpur ..	300	2	..	
Lakhikola ..	200	1	..	
Telkupi ..	300	2	..	
Atgharia ..	150	1	..	
Saradangi ..	200	2	..	
Mazibari ..	300	1	..	
Bera ..	300	1	..	
Srikhola ..	200	1	..	
Kowak ..	100	1	..	
Karanja ..	300	1	..	
Joredaha ..	250	2	..	
Pakuria ..	300	1	..	
Ghusuria ..	200	1	..	
Bhangoora ..	300	2	..	

Place where lecture delivered.	Number of people attending the lecture.	Number of lectures delivered.		Remarks.
		Number of unillustrated lectures (without lantern slides).	Number of illustrated lectures (with magic lantern or cinema).	
1	2	3	4	5
Lahirimohanpur ..	200	1	..	
Anyatpur ..	200	1	..	
Rangpur.				
Rangpur Sadar ..	2,000	6	1	
Mithapukur ..	1,500	4	..	
Annadanagar ..	1,500	4	1	
Gaibandha ..	2,000	6	1	
Lalmanirhat ..	1,500	4	1	
Nilphamari ..	2,500	7	1	
Kurigram ..	2,000	6	1	
Mahimaganj ..	1,000	3	..	
Domar ..	1,000	3	..	
Ulipur ..	1,000	3	..	
Saidpur ..	1,000	4	1	

APPENDIX V.

Statement of Exhibitions held in the Northern Circle during 1940-41.

Name and place of the exhibition or show.	Period during which it lasted.	District.	Average number of people attending the exhibition.	Kind and number of prizes awarded.		Value of prizes.	Number of agriculturist receiving prizes.	Departmental contribution to the Exhibition Committee to meet expenses in connection with the organisation of the exhibition.
1	2	3	4	5		6	7	8
								Rs.
Agricultural, Industrial, Health and Poultry Exhibition at Pekri.	3 days. 11th to 13th January 1941.	Rajshahi Sadar subdivision.	1,000	Dudsar *aman* seed Bengal Plough No. 2 Spade .. Hasua .. Sickle ..	2 mds. 2 Nos. 7 ,, 11 ,, 12 ,,	50	35	..
Agricultural, Industrial and Health Exhibition at Nator.	2 days. 15th to 18th March 1941.	Rajshahi, Nator subdivision.	2,500	Dudsar *aman* paddy seed .. "D" Type Peterson's plough .. Castor cake manure	11 mds. 7 Nos. 20 mds.	200	27	150
Agricultural, Industrial and Health Exhibition at Daserhat.	7 days. 2nd to 8th December 1940.	Rangpur, Kurigram subdivision.	500	Sobkam plough No. 2 Bengal plough No. 2 Planet Junior Hand-hoe ..	2 Nos. 1 No. 1 ,,	50	..	..
Agricultural, Industrial and Health Exhibition at Haripur.	4 days. 15th to 18th March 1941.	Dinajpur ..	12,500	"D" Type plough .. "A" Type handhoe Spade .. Buckets .. Watering can .. Aluminium Karai .. Ammonium sulphate manure ..	2 Nos. 2 ,, 9 ,, 9 ,, 3 ,, 2 ,, 4 mds.	125	42	50
Agricultural, Industrial and Health Exhibition at Setabganj.	6 days. 6th to 11th February 1941.	Ditto ..	8,500	Ditto ..	..	125	42	50
Agricultural, Industrial and Health Exhibition at Pabna.	14 days. 2nd to 15th February 1941.	Pabna ..	1,000	"D" Type plough .. "B" Type handhoe Watering can .. Bucket .. Spade .. Nirani .. Hasua .. Sickle .. Brass hata with bolts Jhanjra hata .. Cash prize	4 Nos. 2 ,, 6 ,, 37 ,, 24 ,, 20 ,, 20 ,, 25 ,, 4 ,, 4 ,,	235 15	126 ..	200 ..

Name and place of the exhibition or show.	Period during which it lasted.	District.	Average number of people attending the exhibition.	Kind and number of prizes awarded.	Value of prizes.	Number of agriculturist receiving prizes.	Departmental contribution to the Exhibition Committee to meet expenses in connection with the organisation of the exhibition.
1	2	3	4	5	6	7	8
							Rs.
Agricultural, Industrial and Health Exhibition at Durgahata.	7 days. 8th to 14th March 1941.	Bogra ..	500	Bengal plough .. 9 Nos. Spade .. 28 ,, Buckets .. 24 ,, Watering can .. 13 ,, Dao .. 7 ,, Sickle .. 7 ,, Ammonium sulphate manure .. 5 mds. Castor cake manure 4 ,, Red lebel manure .. 1 md.	236	89	30
				Cash prize	14	..	..
Jalpesh Agricultural, Industrial and Health Exhibition.	4 days. 24th to 27th February 1941.	Jalpaiguri ..	550	Kodali .. 50 Nos. Sickles .. 53 ,, Khurpi .. 53 ,, Gharashi .. 4 ,, Jhanjra .. 1 No. Hata .. 1 ,, Iron Poultry case .. 4 Nos.	164	44	100
				Cash prize	86	..	..
Agricultural, Industrial and Health Exhibition and Maker Sankranti Mela at Bejanbari.	3 days 13th to 15th January 1941.	Darjeeling ..	3,000	Blankets .. 20 Nos. Sujni .. 8 ,, Sweaters .. 10 ,, Ganjies .. 12 ,, Bowls .. 3 ,, Enamel dishes .. 6 ,, Enamel mugs .. 11 ,, Mufflers .. 2 ,,	50	60	50
Darjeeling Flower Show ..	1 day. 6th May 1940.	Ditto ..	500	.... ..	..	..	100
Gopalpur Sugarcane Exhibition.	4 days 7th to 10th March 1941.	Rajshahi ..	6,000	Exhibition was arranged by the Gopalpur Mill authorities but the Departments of Agriculture, Industries, Public Health, Live Stock and Veterinary of Calcutta Corporation participated.			

APPENDIX VI.

Statement showing distribution of seeds and cuttings in the Northern Circle during 1940-41.

Name of seeds and cuttings.	Quantity sold. Md. sr. ch.	Quantity supplied free for distribution. Md. sr. ch.
Aus paddy	87 7 8	237 22 0
Aman paddy	866 31 10	502 9 0
Jute seeds	..	1 3 0
Flax seeds	2 26 0	0 7 0
Linseed	..	1 4 0
Lentils	12 6 8	59 36 0
Gram	23 27 8	59 10 0
Peas	0 7 13	41 23 8
Oats	..	20 7 0
Wheat	31 33 0	135 10 0
Rahar	0 13 8	..
Cowpea	..	36 32 0
Agartala Kalai	..	1 30 0
Tobacco seeds	67½ tolas	273 tolas.
Mustard	62 29 6	121 33 0
Maize	333 1 12	40 8 0
Juar	0 2 0	26 2 0
Dhaincha	..	44 15 0
Oats and peas	0 3 8	15 22 0
Potato	53 0 0	143 20 0
Groundnut	15 39 12	..
Vegetable seeds	..	4,120 packets.
Napier grass cuttings	168 15 0	749 20 0
Sugarcane cuttings	45,350 Nos.	56,000 Nos.
Cotton seeds	0 3 0	0 15 0
Vegetable seedlings	527 Nos.	1,605 Nos.
Tobacco seedlings	1,050 "	2,650 "
Plantain suckers	112 "	..

APPENDIX VII.

Activities of Khas Mahal, Court of Wards and Agricultural Association in connection with the improvement of Agriculture in the Northern Circle during the the year 1940-41.

Name of district.	Name of agencies.	Distribution of seeds, etc.	Crops grown in the khas mahal farm.	Contribution or grant.	Number of Agricultural Demonstrators applied and maintained, if any.
1	2	3	4	5	6
				Rs.	
Malda ..	Khas mahal ..	*Aus* paddy .. 60 mds.	....	250	Nil.
			B. K.		
Bogra ..	Ditto ..	....	*Aus* paddy .. 3 5	50	Departmental Agricultural Demonstrator, Khanjanpur, supervised work.
			C. G. jute .. 3 4		
			D. 154 .. 4 0		
			Aman paddy .. 4 9		
			Sugarcane .. 1 10		
			Lentil .. 0 14		
			Pea .. 0 14		
			Kalai .. 1 10		
Jalpaiguri ..	Ditto .. Seeds, etc., distributed for growing in 10 khasmahal farms in Alipur and Falakata.	Dharial *aus* .. 10 mds.			
		Dudsar *aman* .. 10 ,,			
		Latisail *aman* .. 10 ,,			
		Maezi for fodder .. 2 mds. 20 srs.			

		Jute D. 154 ..	15 srs.	....	1,800	Two Agricultural Demonstrators during the year.
		Napier grass ..	12,000 Nos.			
		Wheat P. 52 ..	3 mds. 30 srs.			
		Oats (mixed) ..	2 mds.			
		Peas (fodder) ..	1 md. 10 srs.			
		Matihari tobacco ..	10 tolas			
		Potato (Darjeeling) ..	35 mds.			
		Mustard ..	30 srs.			
		English vegetables ..	200 packets.			
		Radish ..	20 tolas			
		Sikkim peas ..	2¾ srs.			
		Ammonia sulphate ..	18 mds. 12½ srs.			
		Castor cake ..	84 mds.			
		Red Lebel ..	60 ,,			
		Bonemeal ..	16 ,,			
Pabna ..	Khas mahal ..	Gram (S. 4) ..	10 mds.	....	..	One Agricultural Demonstrator appointed at a monthly pay of Rs. 25 with effect from 7th October 1940 and terminated on 31st March 1941.
		Groundnut ..	1 md.			
		Motihari tobacco seedlings.	1,500 Nos.			
		Napier grass cuttings	30 mds.			
		Dharial *aus* paddy ..	9 mds. 9 srs.			

Name of district.	Name of agencies.	Distribution of seeds, etc.		Crops grown in the khas mahal farm.		Contribution or grant.	Number of Agricultural Demonstrators applied and maintained, if any.
1	2	3		4		5	6
		Co. sugarcane ..	80,000 cuttings.				
		Barma potato ..	10 mds.				
		Mustard Tori No. 7 ..	5 ,,				
		Castor cake ..	10 ,,				
		Red Lebel ..	10 ,,				
		"D" Type plough ..	2 Nos.				
		"B" Type Sobkam plough. ..	2 ,,				
		Breeding bulls ..	2 ,,		B. K.		
Naogaon, Rajshahi.	Naogaon Agricultural Association.	....		Dharial *aus* ..	8 0	..	Seeds are grown for distribution among members.
				Dudsar *aman* ..	10 0		
				Jute, C. G. ..	10 0		
				Tori (No. 7) ..	4 0		
				Wheat (P. 52) ..	2 0		
				Gram (S. 4) ..	3 0		
				Lentil (5) ..	5 0		
				Matihari tobacco	0 10		
				English vegetables	0 3		

Dinajpur ..	Debabarman Court of Wards' Estate.	Dudsar, Bhasamanik, Indrasail *aman* paddy seed.	250 mds.				
Ditto ..	Bahin Court of Wards' Estate.	Indrasail, Dudsar *aman* seed.	32 ,,				
Rangpur ..	Jorhat Court of Wards' Estate.	Opened Demonstration Farm at Balarhat.		Gram, lentil, wheat, mustard, potato, English vegetables.	..	..	Supervised by Departmental Agricultural Demonstrator, Mithapukur.
Ditto ..	Lahiri Court of Wards' Estate.	Payraband ..		Ditto	..	..	
Ditto ..	Kakina Raj Court of Wards' Estate.	Gopalrai ..	..	Ditto	..	..	Departmental Agricultural Demonstrator, Lalmonirhat.
Ditto ..	Padya Court of Wards' Estate.	Chandanpat ..	..	Ditto	..	..	Departmental Agricultural Demonstrator, Sadar, Rangpur.

APPENDIX VIII.

Statement showing the production of Napier grass cuttings farmyard manure Silage and water-Hyacinth compost in the Northern Circle, Bengal, during, the year 1940-41.

				Md.	sr.
Napier grass cutting produced in Government forms—					
Quantity of cuttings produced		..	..	628	38
Quantity of planted in farms		..	..	9	0
Quantity sold	..	..	..	148	10
Quantity supplied free	..	..	..	471	28
Artificial farmyard manure—					
Quantity made in Government farms		..	..	11,408	20
Quantity made in Demonstration Centres		..	..	74,939	0
Water-hyacinth compost—					
Quantity made in Government farms		..	..	100	0
Quantity made in Demonstration Centres		..	..	10,950	20
Silage—					
Quantity made in Government farms		..	..	2,273	20
Quantity made in Demonstration Centres		..	..	4,124	20

APPENDIX IX

List of Sugar Factories in the Northern Circle, 1940-41.

Serial No. 1	Name of district. 2	Name of factories with owners. 3	Description of the plant and its capacity. 4	Outturn. 5	Remarks. 6
1	Rajshahi Sadar ..	Laxmi Sugar Mills, Shapura, Manindra Mohan Medini Mohan Roy Choudhury.	1. One Steam Engine—35 N. H. P. 2. Seven Crushers— (a) Chattanooga—1. Extraction—58-60 per cent. (b) Burn & Co.—2. 18″ × 12″ roller. Extraction—59-60 per cent. Capacity—30 P. H. (c) 9″ × 6″ Petterson—4. Extraction—60 per cent. Capacity—20 mds. 3. Furnace— Rohilkhand—6. Output—1·2 mds. per charge. 4. Centrifugals—3. Pot-Castle—30¼.	First Sugar—564 mds. 23 srs.	Crushing commenced from 16th December 1940 and continued up to 9th April 1941. Total quantity of cane crushed during the season was 109,974 mds. 10 srs. from which 10,000 mds. of Rab was produced. From this Rab sugar manufactured up to 9th June 1941 was 5,642 mds. 23 srs. There will be some more sugar. Cane purchased was at the rate of annas 4 per month. Recovery was 4 per cent. of raw cane.
2	Ditto ..	The North Bengal Sugar Mills Company, Limited, Gopalpur (Rajshahi).	Fawcett Peston 1,000 tons capacity double Sulphitation plant.	Average outturn per day about 1,000 maunds sugar.	
3	Dinajpur ..	Setabganj Sugar Mills, Limited, Managing Agents—Surajmal, Nagarmall and Company, 61, Harrison Road, Calcutta.	....	....	

Serial No.	Name of district.	Name of factories with owners.	Description of the plant and its capacity.	Outturn.	Remarks.
1	2	3	4	5	6
4	Dinajpur ..	The Laxmi Sugar Mills, Limited, Head Office—Birampur. Owner—Rai Sahib J. Saha, P. O. Birampur (Dinajpur).	Departmental Type of Open Pan Sugar Factory with Peterson's K. B. Type Machinery.	....	
5	Ditto ..	Sengupta Sugar Mill. Owner—Satindra Nath Sen Gupta.	Open Pan Khandesari—one ton capacity.	....	
6	Ditto ..	Kaharol Sugar Mill of Tilakchand Jitmall of Dinajpur.	Open Pan Sugar Mill ..	....	
7	Ditto ..	Gangaram Rice and Sugar Mill	Open Pan Sugar Mill. Owner—Gangaram Agarwallah, a Marwari merchant.	....	
8	Jalpaiguri ..	Khandeswari Sugar Mills, Hossainabad, P. O. Birpara (Jalpaiguri), Hon'ble Nawab Musharruf Hossain (Khan Bahadur), Minister.	60 B. H. P. Oil Engine, 1½ tons capacity—Peterson's K. B. Type crusher, Peterson's furnace, Kumardhubi Aerator, K. B. Type Pug Mills and 24″ K. B. Type Centrifugal.	....	
9	Ditto ..	Shikarpur Sugar Mills, P. O. Belakoba (Jalpaiguri), Mr. F. Marshland.	Messrs. Blairs, Ltd., and George Fletcher's Double Sulphitation plants. Capacity—750 tons 14 qrs.	....	
10	Jalpaiguri Sadar ..	Altadangi Sugar Estate, P. O. Ramshai Hat (Jalpaiguri) Mr. F. Marshland.	11 H. P. Marshalls Boiler and Engine, Jessop 2 tons crusher Peterson's Plant Furnace.	....	

11	Malda ..	Mathurapur Sugar Mills, Owner—Babu Bahadur Singh, Singhi, Zemindar, Mathurapur, Malda.	(a) Crossby Brothers' Crude Oil Engine, 20 B. H. P. (b) Kirloscar Crusher. (c) Centrifugal—Pott Cassels—Improved K. B. Type. (d) Aerator Grainer (Kirloscar's Plant). (e) Pug Mill. (f) Gur boiling furnace. (g) Crushing Power—250 mds. of cane a day. (h) Productive Power—12 mds. sugar a day.	....	
12	Rangpur ..	Messrs. A. Pandit and Brothers, Rangpur.	1. Improved Peterson Renwick Cane Crusher. 2. A. T. R. Gur Furnace by Messrs. Renwick & Co. 3. 14 B. H. P. Black Stone Crude Oil Engine (hard type). 4. 30″ Pott Cassels William Centrifugal.	....	

Annual Report of the Live-Stock Expert, Bengal, for the year 1940-41.

Charge.—I held charge of the office during the year. Dr. L. C. Sikka, Ph.D., Assoc. I.D.I. B.Sc. (Agri.), was appointed Assistant Live-Stock Expert, Bengal, joined his post on the 24th October 1940, and assisted me in my work from that date.

As during the last year Babu Sailendu Sen remained in charge of the Cattle Breeding Section, Mr. C. C. Dean, N. D. D., of the Dairy School and Babu N. N. Sur, I.D.D., of the Poultry Section at Dacca.

Maulvi E. Haque was in charge of the Poultry Multiplication Centre at Narayanganj up to 24th December 1940. When he was transferred as Live-Stock Officer, Mymensingh, and was succeeded by Assistant Live-Stock Officer Babu U. L. Majumdar promoted as Live-Stock Officer.

The charge of the remaining four Poultry Multiplication Centres at Jamalganj, Mainamati (Comilla), Midnapore and Ranaghat, which were started during the year, was held by Babus F. N. Chatterjee, B. P. Mukherjee, A. K. Tarafdar and K. L. De, respectively. All these officers were promoted from the cadre of Assistant Live-Stock Officers in this section.

District staff.—The sanctioned strength of the district staff together with the number actually employed both at the commencement and the close of the year is given below—

	Sanctioned strength.	Number employed. 1-4-1940.	31-3-1941.
Live-Stock Officers	14	14	14
Assistant Live-Stock Officers	27	22	27
Stockmen	40	40	39

It will be notified that at the close of the year, the staff employed was up to full sanctioned strength, except for one stockman. This latter vacancy was created by the resignation of one of the stockmen on the 15th February 1941 and the same remained unfilled till the end of the year.

As during the last year 7 Assistant Live-Stock Officers more were selected for training in Animal Husbandry. These officers joined by the 1st week of August 1940 and were still under the training at the end of the year. Their work in their absence from the districts was carried out by the Live-Stock Officer in charge in each case.

The total number of days for which the various officers of the section remained on leave during the whole year was 252.

Tours.—I was on tour for 179 days, the Assistant Live-Stock Expert toured for 57 days and the various Live-Stock Officers and Assistant Live-Stock Officers toured for 614 days. The last figure works out of an average of 147 days of touring for each of the different district officers. This average would certainly have been higher if the various Assistant Live-Stock Officers under training at Dacca had

been at their work in the districts, and if more funds were available for the travelling allowance of the officers. Under the existing arrangement most of the Live-Stock Officers have to tour in two districts, and as such their present modest travelling allowance grant does not permit them to tour for more than 10-12 days during the month. I am of opinion that more funds are needed for travelling allowance, and feel sanguine that the provision of the same will definitely enhance the usefulness of these officers. Each stockman has a fixed headquarter which is changed from time to time as his services are required in different areas. To carry out their duties the stockmen visit the different villages in the locality where stationed. They are required to tour like this for at least 25 days during the month. This intensive touring brings them intimately in touch with the villagers so that they can be very useful in pushing the work of live-stock improvement.

Work.—It is gratifying to note that the year under report witnessed a further all-round improvement in the work of this section. This is clear from the following brief record of the year's activities:—

Cattle.—The scheme is working in 22 districts. A scheme for Darjeeling has been approved and proposals will be forwarded for the other districts this year.

One hundred and fifty Harriana bulls were distributed in the various districts under the scheme. These animals were purchased with funds provided by the Provincial Government. In addition sixteen bulls were issued from the Cattle Breeding Section, Dacca, and the various Live-Stock Officers were successful in inducing many private persons to donate bulls of the approved type. In all 2,580 approved bulls at stud in the Province were being directly supervised by the staff of this section at the close of the year under report.

As already pointed out in the previous reports the district staff of this section is responsible for the looking after of these bulls both in health and disease. This means that our officers have not only to ensure that the bulls are being kept as they should be but have also to attend on them when ill. The latter job should, in all fairness, have been the duty of the Veterinary Department. This arrangement would have left for our staff more time to devote to their multifarious duties, such as ensuring that the bulls were successfully at stud and their services were being properly recorded, castration of scrubs, tattooing of progeny of approved bulls, advise on feeding and general management of live-stock including poultry, and growing and conservation of fodders, etc. It is very pleasing to note that saddled even though our officers are with duties that should really not be theirs, they could still show a definite progress in the legitimate sphere of their activities during the year under report. For instance they castrated 99,577 scrubs this year as compared with 52,482 last year, an increase of nearly 90 per cent. tattooed 62,672 progeny of Government bulls as compared with 54,125 last year an increase of approximately 16 per cent. and recorded 85,203 services as against 68,966 last year, which marks an increase of roughly 24 per cent.

It must be confessed that the figures given here fall considerably short of the actuals both in the case of number of services given by the bulls or their progenies born. At present quite a large percentage of the services remain unrecorded, and there is definite scope for

improvement in this respect to achieve which every effort will be made. Similarly many progeny change hands or are carried away by disease before they be tattooed. The success of the scheme may, therefore, not be judged by the statistics presented here as these definitely under-estimate the real progress.

The great increase in the number of scrubs castrated is very gratifying as it shows that the people are becoming conscious of the importance of the sire. This awakening is further proved by the increased number of services which shows an increased demand for the Government (better) bulls.

It has been our experience that the progress of the scheme is rather slow for the first year or so, *i.e.*, till the villagers see the progeny of the Government bulls. Once the first lot of progeny arrives, the villagers become convinced of the great scope for quick improvement of their degenerate stock by following our advice, and evince keen interest in our work. Progress then simply becomes a matter of time and the number of bulls we can supply. As a result of the work that this section has been carrying on for the past 5 years, there are now present in this province areas which contain hundreds of cattle of the improved type, cattle which to all outward appearances and from the standpoint of utility would compare very favourably with the animals found in such progressive breeding tracts as Hariana. It is not unusual now, for instance, to witness as many as 1,000 head of such cattle being exhibited in a single small cattle show. The Animal Husbandry Commissioner to the Government of India attended one such show this year, and he was deeply struck with the large turnout and the highly improved quality of the progenies of Government bulls.

Now that the scheme for cattle improvement has been in operation for nearly four years in some districts, a number of the female progenies of the Government bulls have calved and are in milk. During the course of my tours this year, I saw many such animals who invariably, were reported to be yielding much more milk than their deshi dams. Many heifers yielding from 6 to 8 seers of milk a day are to be seen.

Similarly the male progeny have been observed to develop into very good bullocks. The owners of these progenies are very conscious of their high quality and generally agree to part with them at a price which may be considered fabulous for cattle in Bengal.

Fodders.—Fully realising that the provision of good bulls alone without improving the conditions of fodder supply would not bring about the desired improvement in the cattle of this Province, the growing of fodder crops was pushed. The district staff carried out the necessary propaganda in this connection and gave the requisite advice regarding the cultivation of such crops. Further 1,522 maunds of fodder seeds and 1,155,500 cuttings of Napier grass were issued free for this purpose.

A part of the cost of these fodder seeds was met from the Jute Restriction Scheme. A special leaflet recommending the cultivation of fodder crops as a substitute for jute was issued during the year.

Silage.—The district staff continued to carry on propaganda to popularise ensilage as the best means of conserving surplus fodder for use during periods of fodder shortage. Their efforts in this connection were highly fruitful as is evident from the fact that they succeeded in the making of 159 pit silos as compared with 83 last year and only 26 during 1938-39.

Poultry.—The work of spreading improved strains of poultry in the villages through the establishment of Poultry Demonstration Centres was continued. It will be recalled that to establish such centres, cocks or eggs (the produce of the Dacca Poultry Section) are distributed free on the condition that the villagers do not keep any *deshi* cocks for breeding. In all 89 cocks and 166 dozen eggs were thus distributed during the year and the total number of such centres functioning in the province was 211 at the close of the year.

It will be admitted that poultry-keeping constitutes a very important subsidiary industry for the small Bengalee cultivator and as such the foregoing scheme of spreading improved strains of poultry which lay better (both with regard to size and number of eggs) than the common *deshi* hens and can thus bring better financial returns to the cultivators is bound to prove very useful and every effort should be made to push the work. In the past our progress in this direction was slow because there was only the Poultry Section at Dacca to supply the required birds and eggs. To push this work therefore it was decided to establish a Poultry Multiplication Centre in each of the five Commissioner's Division. Only one such centre could be started last year and it is very gratifying to note that the remaining four centres were established during the year. All these centres were stocked with Dacca bred birds mainly, but unfortunately disease took a heavy toll of the foundation flock at some of these centres. Once these flocks establish themselves, we may reasonably hope to see a fairly rapid spread of improved poultry in the villages from them.

An Assistant Live-Stock Officer was appointed for a period of six months to specially push the work of poultry improvement in the district of Chittagong which is the home of the important Chittagong breed of poultry.

Goats.—Several letters were received from people enquiring what is the sound breeding policy for goats in Bengal. Unfortunately in the absence of any research work done in the Province this department was not in a position to offer any definite advice. Now that the Government has sanctioned the goat scheme which proposes to carry out the requisite research work in this connection, it is hoped, this much asked for information will become available in due course.

Cattle shows.—The Government provided a sum of Rs. 7,200 for award as prizes to the caretakers of bulls. To select the prize owners for this purpose a number of cattle shows were organised in each district, where besides Government bulls the progenies of these bulls and improved strains of poultry were also exhibited. A total of 55 such shows was held throughout the Province.

I consider the organization of these shows and the award of such prizes a very good way of creating healthy rivalry amongst the

various people to excel each other in the management of the Government bulls and the progenies of these bulls. As no prizes were available for the progenies out of the funds provided by the Government, these were given out of the funds donated by the public bodies for the work of live-stock improvement.

Every opportunity was availed of to demonstrate the work of this section to the public visiting such shows by putting up exhibits, delivering lectures illustrated by lantern slides, and demonstrating such operations as the bloodless method of castration and the mechanical method of separation of milk for *ghee*-making, etc. In this connection, I must emphasise the great necessity of this section possessing the required number of suitable exhibition sets, which it sadly lacks at present.

Dairy School.—Seven Assistant Live-Stock Officers were detailed to undergo the necessary training in Animal Husbandry at the School. They were under training at the close of the year.

Seven Muslims Science Graduates and 3 Scheduled Castes were selected to receive a year's training at the School. The latter resigned. Those who complete the course successfully will be appointed Assistant Live-Stock Officers as vacancies occur.

Six students from the B. K. Institute, Rajshahi, were under training during the year.

The Dairy School will provide the requisite facilities for the practical instruction of the students of the Bengal Agricultural Institute the first session of which starts early next year.

In addition to the teaching some research work regarding *ghee*-making was also attempted. This work is, however, yet in its preliminary stages and no conclusive results are available. I may mention here that for the successful prosecution of such research work it is essential that the Dairyman, the Dairy Chemist, and the Bacteriologist work in collaboration. This can only be possible if all these officers are under me. The services of the Dairy Bacteriologist have been placed under me and I would strongly urge that the same be done in the case of the Dairy Chemist as well. Until such time as the school has its own laboratory the Dairy Chemist may continue to work in the chemical laboratory but in the interest of work it is essential, that his programme of work is laid down and research guided by the Officer-in-charge of the Department of Dairying.

Work done on Dairy Chemistry may be found in the Annual Report of the Agricultural Chemist, Bengal. Work done by the Bacteriologist may be found in the Annual Report of the Assistant Fibre Expert, Bengal.

The Annual Reports of the Cattle Breeding Section, Dairy School and the Poultry Section are appended.

Work for next year.—Schemes for Cattle Improvement for the districts of Rangpur, Jessore and Chittagong will be submitted. The Goat Breeding Scheme will start with effect from October 1941.

With the twenty extra stockmen sanctioned by Government work in the districts will be intensified.

The Maharaja Bahadur of Burdwan opened a small Dairy and a Fodder Farm at Burdwan and good progress is being made.

Acknowledgment.—Thanks are again due to Major I. Stewart, I.A., Deputy Commissioner, Jalpaiguri, for his great interest and assistance in our work, also to a few other District Officers and to the Chairmen, District Boards, Dacca, Faridpur, Mymensingh, Tipperah, Murshidabad and Nadia, for assistance.

The staff in my office worked hard under very understaffed conditions.

The name of the following officer is mentioned for good work:—

Babu B. N. Sen, B.Sc., I.D.D., Live-Stock Officer, Berhampore-Nadia.

F. J. GOSSIP,

Live-Stock Expert, Bengal.

Annual Report of the Poultry Section, Dacca Farm, for the year 1940-41.

Babu N. N. Sur, I.D.D., remained in charge of the section throughout the year under report.

At the close of the year the stock consisted of 19 cocks, 96 hens, 39 cockerels, 65 pullets, 399 chickens, 9 Khaki Campbell ducks, 4 Khaki Campbell drakes, 5 Aylesbury ducks, 3 Aylesbury drakes, 6 ducklings, 3 cross ducks, 5 cross drakes, 10 *deshi* ducks, 7 geese, 6 goslings, 17 pigeons—total 693.

Four hundred and thirty-seven birds were transferred to different poultry multiplication centres during the year under report, 65 cockerels, 2 drakes and 175 eggs were distributed free to different demonstration centres in 9 different districts, and 129 birds were sold.

During the year 9,561 eggs were laid, out of which 2,281 were sold for hatching, 4,088 eggs for table, and 3,192 eggs were set.

The health of the stock was good except for an outbreak of an epidemic disease, which was thought to be fowl typhoid by the Disease Investigation Officer of the Veterinary Department but was subsequently negatived by the Imperial Veterinary Research Institute, Mukteswar.

The disease broke out in the third week of April but was brought under control by segregation and destroying the infected group.

After a heavy shower of rain the epidemic usually subsides. The stock were inoculated against fowl cholera and fowl pox.

During the year the Incubator and Brooder house, godown and office have been built by the Communications and Works Department.

A few birds were sent to the All-India Poultry Show, Irwin Amphitheatre, New Delhi, for exhibition, out of which one hen was awarded the first prize of merit in the utility group.

The Dacca bred fowl has made a name and kept up the reputation of the Department of Agriculture, Bengal, by winning the first place at the All-India Show.

The Farm was visited by notable persons, interested in Poultry raising, including His Excellency the Governor of Bengal on two occasions, Hon'ble Ministers and other prominent persons.

It was reported last year that crossing would cease, but the same has again been started from the cold weather. Selection will, however, be done for egg-laying, size and colour of birds and eggs.

A separate note on turkey, geese and *gola* pigeons is appended below—

A note on rearing of Pigeons.

Pigeons appear to have fairly good commercial prospects though not to the same extent as fowls. There is a steady market for the former in all large towns. They usually sell at the rate of 2 annas to 2 annas 6 pies each at Dacca and Chittagong and from 3 annas to 4 annas each in Calcutta. The market for the young (squabs), however, is very limited and there is little demand for them. There is thus scope for pigeon-rearing being taken up by the cultivators as a side line to supplement their return from the land.

With a view to study the habits of pigeons and also to obtain some definite data regarding their mating, laying of eggs, incubation of the eggs and growth of the squabs an experiment was taken up by the Live-Stock Expert, Bengal, at the Dacca Farm in the year 1939-40 with some birds purchased from the local market. Before starting the experiment an attempt was made to gather information from the people who had kept pigeons for many generations but the information gathered was, as usual, useless and unreliable. The information varied from the statement that pigeons reared young every six weeks or two months to doing so only twice a year.

As already stated the birds were purchased from the local market and were, therefore, of a wild nature, not tame pigeons accustomed to a loft. They had, therefore, to be kept in a covered fowl run for the first few months before the actual experiment could be started. All the birds were then leg-blanded and observations on them recorded.

It was observed that pigeons live in pairs and continue to do so even after mating. They started mating at an age between 5 and 6 months. The hen lays two eggs only at an interval of a day, in very few cases have more than two eggs been found in the same nest. Incubation period of eggs is from 17 to 18 days. Both the male and female sit on the eggs for hatching and after squabs come out both the birds feed the young. Eggs are laid 4 to 5 times in a year and mortality amongst the young is low.

When the squabs are hatched their eyes are closed and the body is covered with yellow down. When about 14 days old they begin to use their legs and ruffle their wings, and also eat small grains like the adult birds. The parents abandon the young from 4 to 5 weeks after hatching. At this age the squabs weigh about half a pound.

Common pigeons do not require to be hand fed, but gather food from nearby fields.

A note on rearing of Geese.

Geese are in good demand by Europeans at Christmas time when they sell from Rs. 5 to Rs. 10 each, but the normal price offered for a goose weighing about 7 pounds is Re. 1-8.

With a view to study their habits a small flock of the common white geese purchased locally were reared at the Poultry Section in the Dacca Farm since 1937. The males of the flock weighed about 9 pounds and the females approximately 7 pounds. The geese were pennned at night and released at 8 a.m. They thus lived on a free range and found their own food, except for one feed of wet mash at night. One gander was allowed for every three geese. The average annual number of eggs laid by the latter was twelve, each egg weighing over six ounces. The hatching was done under a goose with satisfactory results but the attempts at hatching in on incubator proved a failure. The incubation period of the eggs was observed to be from 28 to 30 days.

It was very easy to rear the geese and their young. The gooslings were given a wet mash of chickfood the second day after hatching. They are very hardy and when about three weeks old follow the adult birds and forage for themselves.

A note on rearing of Turkeys.

As commercial proposition• turkey rearing appears to have little prospects. Christmas is about the only period of the year when there is a demand for turkeys and even this demand is gradually falling off.

With the object of studying their habits, laying of eggs, etc., a small flock of the birds was reared by the Live-Stock Expert, Bengal, in the Dacca Farm during the period from 1936 to 1938. The common black bronze turkeys were purchased from the local market. The stag weighed between 11 and 12 pounds and the female between 5 and 6 pounds. It was observed that the birds appeared to pine and refused food for the first few days after purchase and this was the case with all the newly purchased turkeys.

The hens laid on an average 60 eggs in 10 months, each egg weighing over $2\frac{1}{2}$ ounces. Eggs were laid in clutches of 10 to 12 and hatching was done under a hen and also under a turkey. The period of incubation was observed to be 28 days. The best age for hatching is when the cock bird is over 2 years and the hen over a year and a half. The chicks hatched between October and February and thrived best and this was due to the dry climate then obtaining.

The chicks were fed with the same grains as fed to other chicks.

A dry climate is congenial to turkeys and so it is difficult to rear them in the damp climate of East Bengal. Attempts at rearing the birds in the Darjeeling Hills have failed. Mortality amongst the late-hatched chicks was high when the temperature dropped due to storms in March-April.

F. J. GOSSIP,

Live-Stock Expert, Bengal.

Annual Report of the Dairy School, Dacca Farm, for the year 1940-41.

The Dairy School was established in 1938, Mr. C. C. Dean, N.D.D., Dairy Instructor, was in chage of the School during the year under report. The main object of the school is to train students in Animal Husbandry and Dairying and also to carry on experimental work on milk and its products.

Seven Assistant Live-Stock Officers and seven Muslim Science graduates received training during the year under report. Special feature of the training was to impress upon them the economic aspects of this huge but neglected industry.

The officers and graduates were instructed in all branches of agriculture, fodder growing and silage making, butter, *ghee*, *chhana* and *dahi* making. This short training as proposed by the Live-Stock Expert, Bengal, materially helps them in their demonstration work in the districts.

This year more work was taken in hand on *ghee* making.

It was observed that *ghee* made direct from cream could be made cheaper than *ghee* made from butter. Cream with an acidity as high as 6 per cent. Lactic Acid, when boiled to 120°C. to 123°C., gave *ghee* with a good flavour, aroma and grains.

Outturn of *ghee* from both sour and sweet cream was the same, but there was a marked difference in the nature of the bye-products. Sour cream *ghee* was even in grains, sharp in flavour and the grains were regular in size. Sweet cream *ghee* on the other hand was poor in flavour and wanting in qualities which the *ghee* market demanded.

His Excellency the Governor of Bengal, the Hon'ble Minister of Agriculture, the Hon'ble Finance Minister visited the school. Many ladies and gentlemen from the town and university visited the school.

The school was under the control of the Live-Stock Expert to the Government of Bengal. From an educational point of view, the necessity of a cold storage is keenly felt.

F. J. GOSSIP,

Live-Stock Expert, Bengal.

Annual Report of the Cattle Breeding Section, Dacca Farm, for the year ending 31st March 1941.

Charge.—Babu Sailendu Sen was in charge of this section throughout the year and was assisted by Maulvi Mohammad Ali Sardar, Overseer.

Policy of the section.—The policy of the section remained unchanged and the resolution passed by the Cattle Breeding Committee is being followed. The herd now consists of pure bred Hariana and crosses between Hariana and Bengal cattle and a small herd of Murrah Buffaloes. The section aims at Cattle Breeding, the improvement of stock, supply of bulls to districts and teaching dairying.

Diseases and casualties.—The general health of the stock was good throughout the year. Septicæmia in new born calves has been the cause of a number of deaths. Cattle were inoculated against rinderpest by goat virus method.

Distribution of bulls.—Sixteen bulls have been distributed during the year.

Manures and artificial farmyard manure.—About 10,000 maunds of cowdung and 12,000 maunds of artificial farmyard manure have been made and supplied to different sections of the Farm during the year.

Receipts and expenditure.—The expenditure (excluding stock transfer) was Rs. 22,172-9-3 and receipts (excluding stock transfer) Rs. 7,599-8-3 have been credited as sale proceeds to the Treasury.

Visits.—His Excellency the Governor of Bengal visited the Farm twice during the year under report. The Hon'ble Minister in charge of Agriculture and Industries Department and the Hon'ble Finance Minister, the Animal Husbandry Commissioner to the Government of India visited the section during the year under report.

Training and Demonstration.—Six students from the Basanta Kumar Agricultural Institute, Rajshahi, two men from the zamindary of Mr. N. K. Acharya Choudhury of Muktagacha and Maulvi Ferojali Choudhury of Narayanganj were under training at this section during the year.

Practical demonstrations have been given to the lady students from Kamarunessa Girls' College and Ananda Asram School, Gandaria, and to the boys of Tejgaon Polytechnic High School and also to the sepoys of the Marhatta Regiment.

List of Bulls distributed during the year 1940-41.

1. Live-Stock Officer, Nadia and Murshidabad	14
2. Sir Daniel Hamilton's Farm, Gosaba	2
Total ..	16

Strength of the herd as it stood on the 1st April 1941.

Hariana—		
Cows	34	
Bull	1	
Male calves	23	
Female calves	39	97
Hariana cross—		
Cows	21	
Male calves	14	
Female calves	20	55
Murrah Buffaloes—		
Cows	14	
Bull	1	
Males calves	5	
Female calves	13	33
Nutrition Bullocks	12	12
Total ..		197

Average milk yield of different herds during the year 1940-41.

	Lbs.
1. Hariana	10·00
2. Hariana cross	8·87
3. Murrah Buffalo	11·67

Classification of cows according to best yield in a lactation.

		Lbs.
1.	Chapa	5,683½
2.	Chandra	4,956
3.	Sudha	4,857
4.	Jamini	4,850
5.	Nilu	4,786½
6.	Maya	4,366
7.	Saraju	4,263½
8.	Lucy	4,028
9.	Bimala	3,907½
10.	Chaya	3,814
11.	Jamuna	3,802
12.	Sati	3,637
13.	Bala	3,612
14.	Kamali	3,600
15.	Nirupama	3,515½
16.	Promila	3,499
17.	Sukrity	3,315½
18.	Mekhola	3,265
19.	Kanan	3,150½
20.	Chania	3,100
21.	Jayanti	3,037½
22.	Jharia	3,032½

Deaths and causes—

Septicaemia of New born calves	12
White Scour	3
Enteritis	5
Aneamia and Debility	3
Fracture of the leg	1
Diarrhoea	1
	25

F. J. GOSSIP,

Live-Stock Expert, Bengal.

Note on Goat rearing for milk and mutton in Bengal.

The Live-stock Census for 1940 shows that there were a total of 6,545,950 goats in the Province when this census was taken; of these 1,709,954 were under one year of age.

The rearing of goats forms a very much more active part in Animal Husbandry of the Province than the rearing of sheep does, as nearly every cultivator keeps one or two goats.

There are three distinct types of goats in Bengal, *i.e.*—

(*a*) the small black goat;

(*b*) the medium sized grey goat with black markings; and

(*c*) the white and brown bearded goat.

The Bengal goat is a very prolific breeder, and seems to kid twice a year while in over 90 per cent. of cases she produces twins.

For the reason given above goats are seldom milked, but where milked once a day, some produce from one to two pounds of milk in the morning and feed their kids in addition. The general practice is to rear goats for flesh not for milk.

The skin of the Bengal goat is of fine texture, hence the crossing of up-country males with Bengal goats is not recommended by the Department of Agriculture.

To improve the breeds of goats in the Province and to try and make Bengal independent of outside animals, Government has sanctioned a Goat Breeding Scheme which will carry out experiments on all local breeds of goats also crossing with up-country bucks. For it is estimated that over 5,000,000 goats are imported into Calcutta yearly.

F. J. GOSSIP,

Live-Stock Expert, Bengal.

Annual Report of the Agricultural Engineering Section for the year 1940-41.

Charge.—I held charge of the office of the Agricultural Engineer to the Government of Bengal for the full period under review.

Tours.—I was on tour in the province for 67 days during the year and visited the following districts—Mymensingh, Jalpaiguri, Calcutta, Murshidabad, Tippera, Chittagong and Midnapore.

Much more touring could and should have been done if the grant under "Travelling allowance" had been increased. At present it is quite inadequate for the necessary activities of the section to be carried out efficiently.

Staff.—The work of this section was carried out with the assistance of the same staff as I had last year. If the work of the section is to be of more use to the province, it must be further increased. The staff consists of the following—Babu K. B. Roy as Overseer, Babu A. L. Choudhuri as Foreman, Babu S. N. Banerjee and Babu Chandra Chur Choudhuri as Draftsmen, Maulvi Md. Badrul Alam as Tracer and Babu B. B. Sen as clerk.

New machinery invented and designed.—(*a*) My last design for a large steel trolley for large portable Irrigation plants was redesigned for Dunlop wheels. One such was made up this year for a private irrigation scheme.

(*b*) Revised design for Asbestos Cement Irrigation Valves of sizes.

Mechanical designs and drawings.—Some 35 mechanical designs and drawings were put out in the year under report.

New implements invented and made.—

(1) Jute Seed Planter.
(2) Single Bullock harness for Pole Plough.
(3) Single Bullock harness for Beam Plough.
(4) Cheap light type Wooden Cultivator.
(5) Peterson's Bengal No. 2 plough showing the bottom and side curves.
(6) Peterson's Wooden Beam Plough.
(7) Peterson's Pulverisor for hard laterite and clayey soils.
(8) Peterson's Cultipacker.

Furniture designed and made.—

(1) Platform for Drawing Class for Teacher and stool for students of the Bengal Agricultural Institute.
(2) Wooden table with drawers for Drawing Class.
(3) Almirahs for apparatus room (for keeping drawing instruments).
(4) Wooden shelves for Agricultural Engineering Workshops.

Departmental types of machinery sold during the year.—

	No.
(1) Aereator and Crainer	1
(2) Rab Furnace	1
(3) Peterson-Renwick Power Mill 1 ton size ...	1

Departmental types of implements sold during the year.—

	Nos.
(1) Bengal No. 2 ploughs	46
(2) Modified Bengal No. 2 plough	1
(3) Sobkam No. 2 plough	213
(4) Sobkam No. 1 plough	20
(5) Sobkam "A" plough	5
(6) Pahari plough	5
(7) "Dacca" No. 1 plough	127
(8) Light plough, Type "D"	134
(9) Light plough, Type "A"	2
(10) "Amir" plough	14
(11) "Deshbandhu" plough	1
(12) "Bangla" plough	1
(13) "Chasa" plough	1
(14) Beam plough, new type	15
(15) Light plough, Type "C"	35
(16) Peterson's Rakes	7
(17) Cattle Rake	2
(18) Ladders	2
(19) Handhoes, Type "A"	53
(20) Handhoes, Type "B"	73

Civil Engineering Works constructed during the year.—

(1) Construction of Poultry Centres at Comilla, Jamalganj, Ranaghat, Midnapore and Narainganj.

(2) Erection of machinery and bases at Institute Barn, Engineering Workshops and Dacca Farm Dairy.

(3) Reclamation work at the Institute Area for the Sugarcane Testing Station.

(4) Standard type cooly sheds at the Dacca Farm.

(5) Construction of Peterson's K. B. type Rab Furnace at Setabganj for the Co-operative Societies.

(6) Construction of Peterson's Double Pan and Single Pan Gur Furnaces at the Dacca Farm.

(7) Construction of foundation and erection of the Weighbridge at the Institute Area.

(8) Construction of Garage and Road for the Jute Committee at the Dacca Farm.

Civil Engineering Drawing prepared.—

(1) Irrigation Scheme of Chittagong Farm—(*a*) Contour survey, (*b*) Level section of roads, culverts, etc., (*c*) Irrigation channels, (*d*) Culvert with R. C. C. slab.

(2) Index map showing position of the proposed embankment, etc., of Satla Bheel in Bakarganj district.

(3) Irrigation scheme at the Institute Area, Dacca.

(4) Level section of a Dacca Farm drain.

(5) Culvert for Midnapore Farm.

(6) Site plant for Retting Tank and Glass House for Jute Research Laboratory.

(7) Proposed shed for Cinema Cart and site plan of same.

(8) Proposed Pot Culture House for Chinsurah Farm.

(9) Proposed building for keeping records of different Expert Sections of Dacca Farm.

(10) Site plan of the proposed enclosure and racks for tees, angles, pipes, etc., in the Agricultural Engineering Workshops.

(11) Proposed Cattle Shed for Chinsurah Agricultural School for two cows and also for 8 cows.

(12) Fowl and chicken runs for Chinsurah Agricultural School.

(13) Lean to shed 90′ × 12′ (connected to Carpentry, Foundry and Smith Shops of the Agricultural Engineering Workshops).

(14) Revised standard type manure pit for Chittagong Farm for 6 pairs of bullock.

(15) Plan showing how the Deputy Director of Agriculture, Eastern Circle's office is occupied.

(16) Proposed shed for making ghee, chhana, etc., at the New Dairy for Institute.

(17) Revised layout plan of fowl and chicken runs for Midnapore Centre.

(18) Extension of fowl and chicken runs at Dacca Farm.

Surveys undertaken.—

(1) Contour and layout of the Chittagong Farm.

(2) Survey for the layout of irrigation channel at the Institute Area.

(3) Levels taken for the irrigation of proposed flax area at Godagari.

(4) Survey of Mr. Peppercorn's land for proposed irrigation scheme.

(5) Levels and necessary measurements taken for the proposed Dinajpur Farm drainage scheme.

(6) Levels and necessary measurements taken for the proposed drainage scheme of the Chinsurah Farm.

(7) Layout of irrigation channel for tobacco, flax and linseed at the Dacca Farm.

(8) Levels taken at Marichar Bund at Companyganj in Tippera district.

(9) Levels taken and laying out of irrigation channels and installation of pumping plant at Naraingani for irrigating flax area.

Works carried out by the public under my supervision and instructions.—(*a*) Three large Protection, Irrigation and Drainage Schemes for the cultivation of sugarcane in the Nadia and Murshidabad districts were carried out under my advice and instructions. Similar work carried out in the Rajshahi district last year and the year before, have proved very satisfactory. Yields of sugarcane per acre previously obtained of 400 maunds have been raised to 1,250 and 1,400 maunds.

(*b*) A large reclamation scheme of 16 square miles to reclaim the Satla Bheel which is of 80 square miles in area in the Bakarganj district was undertaken this year under my advice and supervision. As it would have been too expensive to reclaim the whole area at one time, I advised that a 16 square miles section be taken up. The whole of this first section of 16 square miles was contoured and plans drawn up for protection, drainage and irrigation. The cost of this scheme works out at Rs. 15-10 per acre—Rs. 1,60,067 for the whole scheme. This is a very economical scheme, the soil is very rich and all varieties of crops can be raised throughout the twelve months. The scheme has gone up to Government for sanction.

(*c*) Advised on a similar scheme in the same district and provided a rough estimate of costs. This scheme has not got any further.

(*d*) I have been trying for the past three years to obtain sanction for a small 300 acres reclamation scheme in the Jalpaiguri district, this to be used as a demonstration reclamation scheme and at last I believe I have succeeded in getting this through. If this scheme is successful there are many such that could be undertaken in this district, alone, where there are many areas lying fallow which would grow good crops if some water were to be applied. The water in most cases is available alongside from streams.

(*e*) Recently I have submitted a suggestion that the whole of the Hoar Area in the Mymensingh district amounting to some 500 square miles be reclaimed. This vast area lies fallow year after year and could very economically be brought under cultivation by lift irrigation. Six months out of the twelve the whose area is submerged under from 10′ to 14′ of water and yearly receives a deposit of silt. Six months out of the twelve when the water recedes, these areas are from 10′ to 12′ above water level in the surrounding rivers and khals, this is too high a lift for indigenous methods of irrigation. The soil is a good clayey loam, which will hold up water, in consequence there will result very little wastage of water. The soil will grow any crop that will grow during this period of the year (winter). I accordingly suggest that any individual area taken in hand for reclamation, 3/5ths be a food crop and 2/5ths a money crop. Three-fifths say out of 500 acres will be sown thus—200 acres of Boro rice and 100 acres of Jally *aus* rice and the balance 200 acres under *rabi* crops. Boro needs some 22 inches of water, Jally *aus* about 8 inches and *rabi* on these land approximately 4 inches—a total of 34 inches divided by 3 inches = 11⅓rd inches or say 12 inches on an average for the whole crop. If we could provide water at annas 4 per inch the average cost per crop would be Rs. 3 which is quite within the paying power of the cultivator especially when the average weight of crop of Boro grown under existing conditions is some 15 maunds per acre but with a good and steady supply of irrigation water the yield per acre will be 30 to 35 maunds per acre. If the first 15 maunds is not taken into account, the extra

yield of say 15 maunds at Rs. 1-8 per maund will give him Rs. 22-8 out of which amount he is called upon to pay a water rate of only Rs. 3.

I would also suggest that on these same areas co-operative farming could be demonstrated by adopting mechanical cultivation in addition to lift irrigation. The population of Bengal is rising rapidly, the land available for growing their food remains the same in area, therefore, something must be done to increase the yield of grain over the same area, *i.e.*, if for instance, one acre of land at present yields 15 maunds of *dhan* by existing methods of cultivation this acre should be made to yield 30 maunds and this can be easily and very economically done by adopting mechanical cultivation without any extra cost in the application of manures or fertilisers. The areas available over the Hoar for reclamation are ideal for both mechanical cultivation and lift irrigation.

Demonstrations.—A few demonstrations in the proper use of my improved ploughs in the Jessore and Dinajpur districts were given, because very few people understand how these ploughs should be used. I submitted a suggestion to the Director that all Demonstrators of this Department should be called into Dacca, for a few days at a time, in batches, to learn the proper methods of working these ploughs and also other cultivating implements, but unfortunately this scheme has been postponed. The majority of my improved ploughs are flat ploughing inverting ploughs like English ploughs, whereas almost everyone including Departmental employees, immediately they obtain one of these ploughs commence to work them at an angle like the desi plough, then complain that they do not work well.

A scheme for the distribution of two types of my light improved ploughs, the wooden "Dacca" plough and the "D" type light steel plough, 400 and 100 of each, among the different thanas of Bengal for demonstration purposes was submitted but unfortunately the scheme has taken so long to receive sanction that it is very doubtful if it can be carried out now, owing to the cost of these ploughs having exceeded the estimated cost by some 33 per cent. due to the high cost of raw material.

Estimates prepared for different works.—Some 45 estimates were made during the year under report. These included schemes both for mechanical as well as civil engineering undertakings.

Sugar and gur factories of the open pan departmental type.—All departmental types of *gur* and sugar factories did exceedingly well this year.

Agricultural workshops.—The departmental workshops have been steadily employed in the overhauls, in the manufacture of newly designed machinery, implements and furniture; the work done being too numerous to list in this report.

Enquiries and advice.—Enquiries this year for open pan sugar factories and *gur* plants have not been as many as in some previous years, but enquiries in connection with irrigation and agricultural

implements and other matters connected with agriculture have increased considerably and all enquiries were in every case promptly dealt with and in several cases plans and estimates provided.

Advice is asked for by Government and the public in connection with the manufacture of sugar and *gur*, irrigation plants, the irrigation of crops, means and sources of irrigation water-supply, tube-wells and drinking water-supply schemes, improved methods of cultivation, improved machinery and implements, buildings, drainage, layout of farms land reclamation and land improvement schemes and numerous other subjects relating to agriculture. These have to be individually treated and advice given as conditions differ practically in every case.

Workshop apprentices.—This year a larger number of apprentices were enrolled than last and there were more applicants than vacancies. This was because quite a good percentage of our previous apprentices were fortunate in securing posts.

H. C. E. PETERSON,
Agricultural Engineer, Bengal.

Annual Report of the Dacca Farm for the year 1940-41.

1. **Area.**—The total area of the Farm is 353·70 acres of which 242·81 acres were under cultivation, the rest being occupied by buildings, roads, tanks and Agricultural School; besides 9·81 acres were cultivated from the Dairy area.

The distribution of cropping in the Farm proper was as under:—

	Acres.
Experimental cultivation	86·87
Non-experimental cultivation	138·84
Cultivation on economic basis	17·10
	242·81

The gross cropped area was 286·71 acres, 43·9 acres having been cropped twice in the year. Besides this 6·57 acres were used by the Cane Seedling Testing Station in the Institute area. During the year under report the site of the Cane Station has been shifted to the western bank of the Chanda tank which is south of the Agricultural Engineer's workshop.

2. **Rainfall and character of the season.**—

Months.	Rainfall in inches. Normal.	Rainfall in inches. Actuals.	Number of rainy days.
1940.			
April	5·49	0·73	2
May	8·61	8·60	11
June	10·67	9·92	13
July	12·32	6·33	20
August	11·55	11·50	20
September	10·49	15·92	20
October	5·27	3·47	3
November	1·85	0·14	1
December	0·36	Nil	..
1941.			
January	0·46	0·73	2
February	0·54	2·95	1
March	1·59	Nil.	Nil
	69·20	59·29	93

Occasional showers in the previous March helped the preparation of land for *kharif* crops to a great extent but subsequent continuous drought delayed the sowing of *kharif* crops.

The sowing was completed in May when good showers were obtained, but the drought in July again affected the growth of *aus* and fodder crops and hampered the transplanting of *aman* paddy. Certain areas in B and C blocks could not be transplanted before the 3rd week of September, which was unusually late for any good crop. Consequently the average outturn of *aman* paddy was very low. Subsequent rainfall was beneficial for *rabi* crops of the Farm, namely, cowpea and flax, etc., although a little damage was done to the tobacco and flax crops by hailstorm in February.

3. **Staff.**—Several changes occurred among the staff during the year. Babu Santi Prosad Sen Gupta held charge of the Farm up to 17th April 1940 and was succeeded by Babu Santosh Behari Bose who remained in charge of the farm up to 3rd September. Maulvi Md. Hossain Ali held the charge of the Farm for the remaining period of the year. Maulvi Anwaruddin Ahmed was the Farm Superintendent up to the 30th September and was followed by Maulvi Md. Hossain Ali, No. II, who worked for two and half months only. On his transfer to Suri (Birbhum) Maulvi Md. Hamza Hashmi was appointed as Farm Superintendent and continued up to the end of the year.

Four Overseers, two clerks and two Agricultural Demonstrators were as usual, attached to the Farm. On transfer of Babu Sankar Prosad Bhattacherjee, Maulvi Mashier Rahman Khan has been appointed Overseer in his place.

4. **Operation during the year.**—(*I*) *Experimental cultivation.*—Result of experiments conducted under the different Experts will be found in their respective reports. A short note of the work is given below:—

(*a*) *Experiments of the Agricultural Chemist.*—(*i*) *Basu's plot.*—This experiment was started in 1908 to study the effect of green manure alone and in combination with lime and bonemeal in increasing the water holding capacity of the soil. The experiment has been discontinued this year.

(*ii*) *Meggit's plot.*—The experiment as in previous year was continued on Dharial *aus* paddy. Nicifos gave the best yield while castor cake and Ammophos were the next best, both giving equal outturn. Gram was sown in the *rabi* season but did not thrive well due to a heavy shower at the very start.

(*iii*) *North Mirpur Joar plot.*—The experiment was to test the effect of Nicifos and Diammophos on Dharial *aus* paddy. As the latter was not available only Nicifos was used. Consequently conclusive results could not be arrived at.

(*iv*) *West Suti Green Manure plot.*—The plot was green manured with joar, cowpea, til, dhaincha, sunnhemp and crotolaria in previous winter and Kataktara *aus* paddy was grown in the *kharif* season. The plot green manured with *Dhaincha* gave the best result. In *rabi* season the plot was kept fallow.

(*v*) *Poultry II.*—The effect of different doses of cowdung, lime and bonemeal on virgin soil separately and in combination was studied on Kataktara *aus*. The best result has been obtained from a plot treated with cowdung and lime at the rate of 300 and 60 maunds per acre, respectively.

(*vi*) *Darbari High and Central Mirpur 17-18 and Basu south-east.*—Kassier phosphate and bonemeal were tried on Kataktara *aus* paddy. Bonemeal gave better yield in the Darbari and Basu south-east while Kossier phosphate did well in the Central Mirpur 17-18. In *rabi*, mustard sown in Central Mirpur failed due to moisture deficiency and Darbari High was kept fallow. Matikalai has been green manured in Basu south-east.

(*vii*) *Hazilow.*—The experiment was started in 1928 to study the effect of Nicifos and Diammophos on transplanted *aman* paddy. For want of Diammophos in the market mustard cake was used. The result obtained was in favour of mustard cake.

(*viii*) *Suntilow.*—The land has been relayed out and uniformity of the soil is being studied.

(*ix*) *Sugarcane main area.*—Sixty-two varieties of cane were grown for trial and multiplication in three groups—early, medium and late—in block system. Co. 508 and 281 in the early group. Co. 213 and 371 in the mid-season, Co. 421 and 527 in the late variety were found promising. Crops are being harvested and final selection will be made by the Agricultural Chemist.

(*x*) *Manurial Experiment Sugarcane.*—After a basal dressing of cowdung and lime, the effects of bonemeal castor cake alone and in combination, and Nicifos on sugarcane were studied. The crop is being harvested. The results obtained last year was in favour of Nicifos.

(*xi*) *Cane Station.*—The work of Sugarcane Seedling Testing Station continued as in previous year. Thirty-two varieties of canes raised from seeds and cuttings and obtained from other provinces were under observation in relation to the requirements of the factory owners as well as of the cultivators. Of these, 7 varieties proved promising and were sent to the main area for further trial, and 9 were rejected. The rest were retained for further study.

(*xii*) *Paddock area.*—The manurial experiment on Napier grass was continued as in previous year. Application for organic manures and Chemical fertilisers with and without lime was studied. Chemical fertilizers did better than the organic manures.

(*xiii*) *Burartak, North.*—Thirty-six varieties of tobacco have been grown for test and seed multiplication and also for leaf for cigar. The crop has grown well but suffered from hailstorm in February which caused a little damage to the leaf.

(*b*) *Experiment of the Fibre Expert, Bengal.*—Experiments on fibre crops (other than jute), *i.e.*, Altissima, Rhea, Flax Sida, Agava, etc., were conducted as usual but much attention was given to flax cultivation.

(*c*) *Experiment of the Indian Central Jute Committee.*—Manurial experiments on jute were conducted on 2·33 acres of South Mostertak. Variety, spacing, line sowing, etc., were conducted in the rotation area in Mastul High and East Suti in B Block.

(*d*) *Experiment of the Economic Botanist.*—Trials on *aus*, transplanted and medium deep water paddy were conducted as usual on pure line selection of early ripening varieties, yield test and hybridization, etc.

(e) *Experiment of the Second Economic Botanist.*—Work on cotton, linseed and mustard, rahar, cowpea, gram, lentil, other pulses and different kinds of fodder crops, etc., were continued as usual.

(f) *Experiments of the Agricultural Engineer.*—Working of several types of ploughs was tested from time to time in the farm. Plough of D. No. 1 has been found to be better than Peterson's C type light plough for small bullocks of the country. Gur boiling tests in both Peterson's double pan and single pan furnace is in progress.

(g) *Experiments under the control of Deputy Director of Agriculture, Eastern Circle.*—Variety experiments both on *aus* and *aman* paddy with five replications in randomised blocks were conducted as in previous years. Of 8 varieties of *aus* paddy D × L (28) was found the earliest and Surjamukhi the latest. As regards outturn P × S (8) gave the highest yield. Of 9 varieties of *aman* paddy, Malati gave the best yield. D × L (13) came next. C 22 × R 22 was the earliest in flowering. Results may be seen in Appendices I and II.

(h) *Experiment of the Agricultural Chemist of the Dacca University.*—The work as in previous year was continued. The notes of the Research Chemist together with the results will be found in Appendix III.

II. *Non-Experimental Cultivation.*—A statement showing the area and average outturn of all important crops grown on non-experimental basis along with highest yield per acre from individual plots may be seen in Appendix IV. A short description of these crops is given below—

Aus.—Four varieties of *aus*, namely, Dharial, Charnock, P × S and D × L were grown. Of these, Dharial occupied the major portion of the area for its large demand in the province. D × L was the earliest, P × S came next; Dharial is a heavy yielder ripening in normal time.

Aman.—Latisail, Bhasamanick and Dudsar *aman* varieties of paddy were grown. Of these three Bhasamanick gave the highest average yield in this farm.

Fodder crops.—Maize in mixture with cowpea was grown on 20·48 acres while joar and cowpea mixed was grown on 7·00 acres. Maize and cowpea gave the best results.

Napier.—8·86 acres of Napier were uprooted the area being full of gaps. The released area will be put under *aus* and other fodder. It is noticed that Napier should not be grown for more than five years continually on the same land except under heavy manuring.

Guinea grass.—It was grown in odd plots on an area of 1·90 acres and seemed doing better than Napier though standing on the same land for a longer period.

Cowpea in rabi.—This was grown for both seed and fodder in the *rabi* season. The late rainfall in October was availed of and the crop was grown very successfully under the Dacca Farm conditions. About 72 maunds of seeds have been obtained besides a good quantity of fodder fed to the cattle.

Flax.—9·66 acres of land was under flax with the seeds imported from Holland. The germination percentage of the seed was very low and as such uniform and good germination could not be secured. Nicifos was applied at a high dose of 300 lbs. per acre. The crop received three irrigations on its growing period and gave a very luxuriant growth. In some of the sub-plots the crop was really a bumper one. The crop has been harvested and subsequent operations are in progress.

English vegetables.—Early strains of cauliflowers, namely, Patna early, Roy's early and Benares early were grown in the kitchen garden. Planting was a little late otherwise they fared well. Benares early seemed to have done better than the other two. Pride of India and Drum-head varieties of cabbage were also grown with success.

Tomatoes of two types—Sutton's perfection and Farm selections—were satisfactorily grown. Peas did very bad this year. Sutton's Early Giant, Duke of Albany and selected Patna were grown but just after germination they were heavily attacked by fungi and insects. Various control measures adopted according to the suggestion of the Economic Botanist were of no avail. It has been decided to grow vegetables in proper rotation in future to obtain better results.

3. **Cultivation on economic basis.**—An area of 2·91 acres in Rakhali byde and 14·19 acres in Zala a, b and c were put under Bhasamanik *aman* paddy. Rakhali byde could not be transplanted in time for want of rain and the crop was a partial failure. The crop in Zala a, b and c was a good one. The financial statement has been given in Appendix V.

4. **Cultivation on barga system.**—Nil.

5. The following relevant statements regarding.—

(*i*) produce and supply of Napier grass cuttings,

(*ii*) quantity of silage prepared,

(*iii*) produce and supply of seeds, and

(*iv*) sale of seeds, manures and implements through the attached seedstore,

are given in the Appendices VI to IX.

6. **Cattle.**—There has been no casualty but eight old and unserviceable bullocks were sold off by public auction. Five half aged local animals have been received from the Animal Nutrition Section. Another six unserviceable bullocks will have to be replaced by purchase of new ones as soon as possible. The general health of the animals was good throughout excepting an outbreak of foot and mouth disease which was successfully controlled.

7. **Fishery.**—Nil.

8. **Practical training in agriculture.**—A few young men joined the farm as unpaid trainees but did not continue for long.

Two batches of I.C.S. officers came to the Farm and were shown the general working of the farms in different sections.

9. **Manufacture of silage.**—1,175,563 lbs. (14,336-5 seers 8 chattaks) of silage was made during the year against 1,193,920 lbs. in the previous

year. The shortage was due to poor growth of Napier grass. Scarcity of fodder was felt in the beginning as well as in the latter part of the year. Sufficient quantity of straw also was not available due to a poor *aman* crop. A judicious and economical use of the available stuff may tide over the difficulty. Maize and cowpea as a catch crop fodder in the low land *aman* area is also under trial.

10. **Manufacture of artificial farmyard manure.**—Artificial farmyard manure was prepared as usual. All the refuse, weeds, cut grass, etc., were heaped, treated with cattle urine, bonemeal and ammonium sulphate and made into good manure. All the sugarcane trashes were used as litter first and then was made into artificial farmyard manure. In all nearly 252,068 lbs. artificial manure was obtained during the year.

11. **Conference and exhibition.**—Nil.

12. **Visits and inspection.**—His Excellency the Governor of Bengal, the Hon'ble Ministers for Agriculture and Finance and many other distinguished visitors both official and non-officials, besides a large number of cultivators, visited the Farm. Use of improved implements, making of artificial farmyard manure with refuse materials, preservation of green fodder as silage, etc., etc., were explained to them.

S. ABDULLAH,

Deputy Director of Agriculture, Eastern Circle, Dacca.

APPENDIX I.

RESULT OF VARIETY AUS EXPERIMENT FOR THE YEAR 1940-41.

Dacca Farm N. M. Grove. Block "C". 1·50 acres ; each plot $\frac{1}{50}$ th acre 8 varieties—5 replications.

Plot No.	Name of variety.	Green weight of paddy.	Green weight of straw.	Dry weight of paddy.	Date of sowing.	Date of flowering.	Date of harvesting.	Remarks. (Average outturn per acre.)
		lbs.	lbs.	lbs.				lbs.
2	D×L ..	7·0	24·0	5·5	15-5-40	18-7-40	21-8-40	
12	Do. ..	12·0	44·0	10·0	15-5-40	18-7-40	21-8-40	
17	Do. ..	8·0	24·0	7·0	15-5-40	18-7-40	21-8-40	
32	Do. ..	10·0	30·0	6·5	15-5-40	18-7-40	21-8-40	
38	Do. ..	14·0	72·0	11·0	15-5-40	18-7-40	21-8-40	
	Total ..	51·0	194·0	40·0	..	..	..	400
4	P×S(8) ..	12·0	48·0	10·0	15-5-40	27-7-40	21-8-40	
9	Do. ..	12·0	50·0	10·0	15-5-40	27-7-40	21-8-40	
19	Do. ..	12·0	48·0	10·0	15-5-40	27-7-40	21-8-40	
31	Do. ..	12·0	56·0	10·0	15-5-40	27-7-40	21-8-40	
34	Do. ..	12·0	56·0	10·0	15-5-40	27-7-40	21-8-40	
	Total ..	60·0	258·0	50·0	..	..	..	500
7	Puki ..	10·0	36·0	7·0	15-5-40	23-7-40	25-8-40	
11	Do. ..	12·0	38·0	10·0	15-5-40	23-7-40	25-8-40	
21	Do. ..	12·0	52·0	10·0	15-5-40	23-7-40	25-8-40	
28	Do. ..	10·0	38·0	7·0	15-5-40	23-7-40	25-8-40	
40	Do. ..	8·0	20·0	5·0	15-5-40	23-7-40	25-8-40	
	Total ..	52·0	184·0	39·0	..	..	..	390
8	Dharial ..	10·0	50·0	6·0	15-5-40	24-7-40	25-8-40	
15	Do. ..	12·0	52·0	10·0	15-5-40	24-7-40	25-8-40	
22	Do. ..	12·0	56·0	10·0	15-5-40	24-7-40	25-8-40	
29	Do. ..	10·0	50·0	6·0	15-5-40	24-7-40	25-8-40	
33	Do. ..	10·0	36·0	7·0	15-5-40	24-7-40	25-8-40	
	Total ..	54·0	244·0	39·0	..	..	..	390
3	Panbira ..	10·0	50·0	7·0	15-5-40	26-7-40	7-9-40	
10	Do. ..	12·0	50·0	8·0	15-5-40	26-7-40	7-9-40	
20	Do. ..	14·0	54·0	10·0	15-5-40	26-7-40	7-9-40	
30	Do. ..	16·0	60·0	10·0	15-5-4	26-7-40	7-9-40	
37	Do. ..	12·0	50·0	9·0	15-5-40	26-7-40	7-9-40	
	Total ..	64·0	264·0	44·0	..	..	..	440

APPENDIX I—*concld.*

Plot No.	Name of variety.	Green weight of paddy.	Green weight of straw.	Dry weight of paddy.	Date of sowing.	Date of flowering.	Date of harvesting.	Remarks. (Average outturn per acre.)
		lbs.	lbs.	lbs.				lbs.
5	Marichbati ..	12·0	42·0	7·0	15-5-40	5-8-40	7-9-40	
16	Do. ..	14·0	50·0	6·0	15-5-40	5-8-40	7-9-40	
23	Do. ..	16·0	70·0	12·0	15-5-40	5-8-40	7-9-40	
25	Do. ..	10·0	28·0	6·0	15-5-40	5-8-40	7-9-40	
36	Do. ..	12·0	52·0	8·0	15-5-40	5-8-40	7-9-40	390
	Total ..	64·0	242·0	39·0	..	..	..	
1	Surjamukhi ..	6·0	16·0	3·0	15-5-40	6-8-40	8-9-40	
14	Do. ..	12·0	40·0	6·0	15-5-40	6-8-40	8-9-40	
24	Do. ..	16·0	48·0	11·0	15-5-40	6-8-40	8-9-40	
26	Do. ..	10·0	34·0	6·0	15-5-40	6-8-40	8-9-40	
35	Do. ..	12·0	42·0	8·0	15-5-40	6-8-40	8-9-40	340
	Total ..	56·0	180·0	34·0	..	..	..	
6	Kumari ..	10·0	20·0	7·0	15-5-40	19-7-40	8-9-40	
13	Do. ..	12·0	40·0	8·0	15-5-40	19-7-40	8-9-40	
18	Do. ..	8·0	32·0	6·0	15-5-40	19-7-40	8-9-40	
27	Do. ..	12·0	36·0	7·0	15-5-40	19-7-40	8-9-40	
39	Do. ..	16·0	52·0	12·0	15-5-40	19-7-40	8-9-40	400
	Total ..	58·0	180·0	40·0	..	..	..	

APPENDIX II.

Result of the Amon Varietal test, Dacca Farm, for the year 1940-41

Block B.—Each Sub-plot 11' × 66'—1/60th acre 9 varieties—5 Replications.

No. of plot.	Name of variety.	Date of trans-planting.	Date of flowering.	Date of harvest-ing.	Green weight of straw.	Green weight of paddy.	Dry weight of paddy.	Average yield per acre.
					lbs.	lbs.	lbs.	lbs.
3	C22 × R22 ..	11/12-8-40	12-10-40	17-11-40	52·0	22·5	14·8	
13	Do. ..	11/12-8-40	12-10-40	17-11-40	48·0	19·5	12·8	
27	Do. ..	11/12-8-40	12-10-40	17-11-40	82·0	29·5	19·5	
33	Do. ..	11/12-8-40	12-10-40	17-11-40	92·0	32·5	21·5	
41	Do. ..	11/12-8-40	12-10-40	17-11-40	74·0	27·5	17·4	
		..	..	..	..	..	86	1,032·0
1	Kartiksinni	11/02-8-40	14-10-40	22-11-40	66·0	29·5	23·5	
11	Do. ..	11/12-8-40	14-10-40	22-11-40	56·0	27·5	20	
21	Do. ..	11/12-8-40	14-10-40	22-11-40	42·0	26·5	18·5	
35	Do. ..	11/12-8-40	14-10-40	22-11-40	75·0	32·5	25·5	
45	Do. ..	11/12-8-40	14-10-40	22-11-40	75·0	32·5	25·2	
		..	..	..	..	..	112·7	1,352
2	Latisail ..	11/12-8-40	16-10-40	22-11-40	50·0	28·0	20·5	
14	Do. ..	11/12-8-40	16-10-40	22-11-40	70·0	27·5	22·0	
24	Do. ..	11/12-8-40	16-10-40	22-11-40	60·0	28·0	21·5	
34	Do. ..	11/12-8-40	16-10-40	22-11-40	92·0	37·5	29·2	
39	Do. ..	11/12-8-40	16-10-40	22-11-40	70·0	35·5	28·2	
		..	..	..	..	..	121·4	1,457·0
9	D × I(13) ..	11/12-8-40	18-10-40	1-12-40	117·0	42·5	32·2	
16	Do. ..	11/12-8-40	18-10-40	1-12-40	97·0	37·5	27·2	
23	Do. ..	11/12-8-40	18-10-40	1-12-40	70·0	27·5	21·0	
28	Do. ..	11/12-8-40	18-10-40	1-12-40	130·0	45·5	34·3	
44	Do. ..	11/12-8-40	18-10-40	1-12-40	102·0	37·5	28·8	
		..	..	..	..	..	143·5	1,722·0
8	Maloti ..	11/12-8-40	19-10-40	7-12-40	108·0	37·5	28·7	
18	Do. ..	11/12-8-40	19-10-40	7-12-40	142·0	43·5	34·3	
25	Do. ..	11/12-8-40	19-10-40	7-12-40	92·0	31·5	25·6	
32	Do. ..	11/12-8-40	19-10-40	7-12-40	108·0	43·5	33·9	
37	Do. ..	11/12-8-40	19-10-40	7-12-40	108·0	41·5	33·8	
		..	..	..	..	..	156·3	1,875·0
17	Dudsar ..	11/12-8-40	19-10-40	7-12-40	106·0	29·5	20·5	
20	Do. ..	11/12-8-40	19-10-40	7-12-40	70·0	37·5	25·6	
30	Do. ..	11/12-8-40	19-10-40	7-12-40	112·0	37·5	31·8	
43	Do. ..	10/12-8-40	19-10-40	7-12-40	96·0	31·5	30·7	
4	Do. ..	11/12-8-40	19-10-40	7-12-40	88·0	7·5	26·7	
		..	..	..	..	..	135·3	1,624·0

APPENDIX II.—*concld.*

No. of plot.	Name of variety.	Date of trans-planting.	Date of flowering.	Date of harvest-ing.	Green weight of straw.	Green weight of paddy.	Dry weight of paddy.	Average yield per acre.
					lbs.	lbs.	lbs.	lbs.
5	Indrasail ..	11/12-8-40	2-10-40	13-12-40	92·0	32·5	21·0	
15	Do. ..	11/12-8-40	2-10-40	13-12-40	96·0	30·5	24·6	
19	Do. ..	11/12-8-40	2-10-40	13-12-40	92·0	31·5	23·7	
31	Do. ..	11/12-8-40	2-10-40	13-12-40	102·0	42·5	31·1	
38	Do. ..	11/12-8-40	2-10-40	13-12-40	92·0	60·0	41·0	
		..	..	..	..	..	141·4	1,697·0
7	Bhasamanik	11/12-8-40	18-10-40	13-12-40	92·0	40·0	30·7	
12	Do. ..	11/12-8-40	18-10-40	13-12-40	58·0	47·5	37·0	
22	Do. ..	11/12-8-40	18-10-40	13-12-40	50·0	20·5	19·5	
29	Do. ..	11/12-8-40	18-10-40	13-12-40	94·0	35·5	27·6	
42	Do. ..	11/12-8-40	18-10-40	13-12-40	102·0	27·5	20·5	
		..	..	..	..	..	135·3	1,624·0
6	Nagra ..	11/12-8-40	23-10-40	14-12-40	102·0	30·0	21·5	
10	Do. ..	11/12-8-40	23-10-40	14-12-40	92·0	30·0	24·7	
26	Do. ..	11/12-8-40	23-10-40	14-12-40	96·0	37·5	25·6	
36	Do. ..	11/12-8-40	23-10-40	14-12-40	92·0	37·5	26·2	
40	Do. ..	11/12-8-40	23-10-40	14-12-40	102·0	44·0	32·2	
		..	..	..	..	..	130·2	1,562·0

APPENDIX III.

Results of Indrasail Paddy—Dacca University Experiment (1940-41). Office Byde.

Area of each plot—1/60th Acre.

This is the fourth year of a 5-year course experiment studying the effect of Inorganic Fertilisers in combination with farmyard manure on the yield of *aman* paddy. The laying out of the plots and the rate of application of farmyard manure in the different plots were same as those given in the previous year. On analysis, it was found that the farmyard manure vary slightly from the previous year and as such the quantities of Ammonium Sulphate, Potassium Sulphate or Superphosphate were varied accordingly. The quantities are given below—

Ammonium sulphate—2 seers 4 chattaks per plot.

Superphosphate—3 seers 6 chattaks per plot.

Potassium sulphate—1 seer per plot.

The procedure for transplanting the rice plants were also the same as in previous years. The plants suffered practically no loss this year as compared to previous years. The yield of straw and green and dry weights of paddy are given in the following table:—

Date of Transplanting—23-8-1940 and 24-8-1940.

Date of Flowering—25-10-1940.

Date of Harvesting—20-12-1940.

Results of Indrasail Paddy—Dacca University Experimental Plot (Manurial)—Office Byde—1940-41.

Plot No.	Green weight of paddy.	Weight of straw.	Dry weight of paddy.	Plot No.	Green weight of paddy.	Weight of straw.	Dry weight of paddy.
	lb. oz.	lb. oz.	lb. oz.		lb. oz.	lb. oz.	lb. oz.
A1	33 9	59 7	27 11	C1	28 13	41 0	22 1
A2	27 11	38 15	21 0	C2	32 7	46 2	25 2
A3	23 9	28 11	19 8	C4	23 5	35 14	16 15
A4	19 14	30 12	15 6	C4	27 3	38 15	22 1
A5	24 5	30 12	18 15	C5	31 0	53 5	25 2
A6	34 14	51 4	28 15	C6	27 3	41 0	21 8
A7	29 12	43 1	25 10	C7	32 13	49 1	24 10
A8	36 10	51 4	29 12	C8	30 12	43 1	25 6
A9	33 13	42 0	26 6	C9	33 13	53 5	28 11
A10	38 7	59 7	30 12	C10	36 14	55 6	28 15
A11	30 12	45 2	23 1	C11	35 14	54 5	26 10
A12	29 4	41 0	22 5	C12	34 14	46 2	25 14
B1	32 13	51 4	26 10	D1	37 15	66 10	29 12
B2	26 2	34 14	19 8	D2	21 0	28 11	16 15
B3	29 3	42 0	24 10	D3	32 11	46 2	26 10
B4	30 12	57 6	24 14	D4	32 9	46 2	27 3
B5	29 12	44 1	23 7	D5	31 4	51 4	27 7
B6	22 1	35 14	16 10	D6	22 1	35 14	18 7
B7	37 7	61 8	30 4	D7	32 5	51 4	25 10
B8	32 5	56 6	24 1	D8	35 2	52 4	29 12
B9	32 13	56 6	26 2	D9	32 13	55 6	24 10
B10	34 5	72 12	27 8	D10	29 12	45 2	25 10
B11	29 3	47 2	21 0	D11	35 14	56 6	28 11
B12	36 14	55 6	27 11	D12	39 7	61 8	30 12
E1	26 10	38 15	23 9	F5	34 14	41 0	24 10
E2	26 6	30 12	20 8	F6	37 2	46 2	28 11
E3	20 8	25 10	16 15	F7	28 7	34 14	23 9
E4	31 12	38 15	25 10	F8	36 14	56 6	30 12
E5	36 6	46 2	24 0	F9	36 10	46 2	26 14
E6	36 14	51 4	27 11	F10	36 14	63 9	29 12
E7	34 14	46 2	26 10	F11	33 1	51 4	26 14
E8	35 2	51 4	23 3	F12	30 8	51 4	22 9
E9	29 4	38 15	24 1	G1	25 6	52 4	27 11
E10	36 14	61 8	24 10	G2	24 10	33 13	19 8
E11	30 12	43 1	24 5	G3	18 8	25 10	15 6
E12	37 7	66 10	23 5	G4	32 13	38 15	20 14
F1	36 14	56 6	30 12	G5	36 14	46 2	25 [illegible]
F2	24 10	30 12	18 11	G6	26 10	31 12	22 [illegible]
F3	31 4	46 2	26 10	G7	33 13	46 2	23 [illegible]
F4	28 11	35 14	23 9	G8	26 10	35 14	21 8

APPENDIX IV (*a*).

Dacca Farm.

Statement showing area, outturn, cost of cultivation, etc., of main crops, 1940-41.

Name of crops.	Area in acres.	Total outturn in lbs.	Average outturn per acre in lbs.	Cost of cultivation per acre including rent of land.	Cost of production per 82 lbs. less value of bye-products.	Remarks.
				Rs. a. p.	Rs. a. p.	
1. *Aus* paddy—						
Dharial ..	9·41	12,447·00	1,322·50	51 0 0	2 5 7	
Charnok ..	8·00	4,147·00	517·75	31 5 9	4 7 9	
P×S (8) ..	4·09	3,376·00	825·42	42 12 0	3 14 11	
D×L ..	1·17	1,220·00	1,046·15	44 14 10	3 4 8	
2. *Aman* paddy—						
Latisail ..	17·70	21,744·00	1,228·47	34 6 6	2 1 6	
Bhasamanik	26·60	38,692·00	1,453·13	42 0 6	2 3 2	
Dudsar ..	8·18	3,168·00	386·00	31 1 3	5 15 0	Crop failed due to drought.
3. Fodder—						
Napier ..	35·64	1,673,456·00	46,954·43	100 7 5	0 2 8	
Guinea ..	1·90	84,187·00	44,308·00	146 12 5	0 4 3	
Maize and Cowpea.	20·48	357,974·00	17,478·50	37 1 6	0 2 9	
Jowar and Cowpea.	7·00	62,812·00	8,973·00	26 2 3	0 3 3	
4. Cowpea (*Rabi*)—						
Seeds ..	18·41	5,478·00	297·55	18 13 5	5 3 5	
Fodder ..		40,672·00	2,209·23	6 11 3	0 4 0	

APPENDIX IV (*b*).

Dacca Farm.

Statement showing the highest outturn per acre from individual plots, 1940-41.

	Yield per acre in lbs.
1. *Aus* (Dharial)	1,968·00
2. *Aman* (Bhasamanik)	1,922·87
3. Napier	79,376·00
4. Guinea	73,122·00
5. Maize and Cowpea	31,078·00
6. Jowar and Cowpea	9,532·00
7. Cowpea Seeds	466·00

APPENDIX V.

DACCA FARM.

Financial Statement of Economic Area, 1940-41.

Gross cropped area—303·09 acres.

Economic area—17·10 acres.

Debit.	Rs. a. p.	Credit.	Rs. a. p.
1. Depreciation of bullocks, 10 per cent.	18 2 6	1. Value of produce ..	1,340 1 6
2. Depreciation of improved implements, 10 per cent. ..	58 14 0	2. Residual value of manure ..	0 11 6
3. Depreciation of country implements, 10 per cent. ..	4 10 9		
4. Interest on capital (cattle and implements at 5 per cent. ..	38 15 9		
5. Supervision charges 1/3 pay of the Farm Superintendent and one Overseer	66 2 0		
6. Rent at 3 per acre	51 4 9		
7. Cost of seedlings	59 7 0		
8. Cost of manure	1 7 0		
9. Residual value of manure ..	Nil.		
10. Cost of production	603 0 0		
11. Profit	438 13 3		
Total ..	1,340 13 0	Total ..	1,340 13 0

APPENDIX VI. (No. 2.)

Statement showing the produces and supply of Napier grass cuttings from Government farm during the year 1940-41.

Name of farm.	.. Dacca Central Farm.		
	Md. sr. ch.		
Quantity grown	91 20 0	91,500 Nos.	
		72,000 No. of root.	
Total ..		163,500 Nos.	
Quantity supplied	91 20 0	91,500 Nos.	
		72,000 No. of roots.	
		163,500 Nos.	

APPENDIX VII. (No. 3.)

Statement showing the quantity of silage produced in Government Farms during 1940-41.

District .. .. .. Dacca.

Name of Government Farm .. Dacca Central Farm

	Md. sr. ch.
Quantity produced	14,336 5 8

APPENDIX VIII. (No. 4.)

Statement showing produce and supply of seeds from Government Farm during the year 1940-41.

Name of farm.	Name of seed.	Qauntity produced.	Quantity of seed supplied.		Total.	Remarks.
			Direct from farm stock.	Through attached seed store.		
		Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	Md. sr. ch.	
	Aman paddy.					
Dacca Central Farm.	Bhasamanik ..	464 36 0	0 0 8	9 7 8	9 8 0	
	Badkalamkati ..	..	10 35 0	4 0 0	14 35 0	
	Dudsar ..	63 21 14	12 29 8	6 31 10	19 21 2	
	Indrasail ..	30 31 9	2 34 8	11 23 4	14 17 12	
	Latisail ..	266 26 4	57 27 8	12 34 15	70 22 7	
	Aus paddy.					
	Dharial *aus* ..	215 5 0	165 2 0	8 6 0	173 8 0	
	Charnock ..	51 5 0	42 18 8	7 30 8	50 9 0	
	D×L ..	15 16 0	11 30 0	..	11 30 0	
	Kataktara *aus* ..	22 9 7	16 9 8	3 0 0	19 9 8	
	P×S(8) ..	37 26 0	34 22 8	1 25 0	36 7 8	
	Cauliflower seed	..	..	17 tolas Roy's early	29 tolas.	
				9 tolas Patna early	29 tolas.	
				3 tolas. Early Benares	..	
	Tomato seed ..	..	5 tolas	3¾ tolas	9¾ tolas.	
	Pea seed ..	..	..	0 1 4	0 1 4	
	Joar seed ..	3 17 0	0 11 8	..	0 11 8	
	Mustard seed ..	0 3 6	6 8 0	..	6 8 0	
	Groit cowpea ..	33 36 8	..	..	..	
	Sugarcane cuttings	210,878 Nos.	71,385 Nos.	27,950 Nos.	99,335 Nos.	
	Gatfa *aus* paddy	..	0 0 8	..	0 0 8	
	Kumari *aman* paddy.	0 20 0	0 1 0	..	0 1 0	
	Cowpea whip poor will.	33 19 8	0 0 8	..	0 0 8	
	Maize seed ..	..	0 12 0	0 1 0	0 13 0	
	Panbira *aman* paddy.	0 22 0	0 0 8	..	0 0 8	
	Paspai *aman* paddy.	..	0 0 8	..	0 0 8	
	Pukhi *aus* paddy	0 19 8	0 1 0	..	0 1 0	
	Cowpea white seed.	4 29 8	..	..	..	
	Paddy seedling	412 bundles.	..	412 bundles.	412 bundles.	

APPENDIX IX.

Dacca Farm Seed Store.

Statement showing sale of seeds, manure and implements, 1940-41.

Name of articles supplied.	Quantity.	Number.	Remarks.
	Md. sr. ch.		
Seeds.			
Aus paddy	20 21 8		
Aman paddy	44 27 5		
Sugarcane cuttings ..	....	30,950	
Napier grass cuttings ..	4 20 0		
English Vegetable seeds.			
Cauliflower seeds ..	....	29 tolas.	
Tomato seeds ..	....	$4\frac{3}{4}$,,	
Pea seeds	0 1 4		
Maize seeds ..	0 1 0		
Cauliflower seedlings ..	....	100	
Tomato seedlings ..	....	325	
Aman paddy seedlings ..	....	412 bundles.	
Banana suckers ..	....	350	
Manures.			
Bonemeal	40 5 8		
Niciphos	22 28 14		
Bone dust	3 17 0		
Sulphate of Ammonia ..	11 1 12		
Muriate of Potash ..	1 32 8		
Lime	2 20 0		
Castor cake	3 13 0		
Implements	Nil.		

Annual Report of the Kalimpong Demonstration and Experimental Farm for the year 1940-41.

1. **Area and elevation.**—The total area of the farm is 72·75 acres which was distributed as follows during 1940-41:—

	Acres.
(*a*) Roads, buildings and waste areas covered by bamboos and wild trees	11·00
(*b*) Experimental area	14·05
(*c*) Non-experimental area	21·85
(*d*) Economic area	2·25
(*e*) Cultivation on Bogra system	23·60
Total ..	72·75

The elevation of the farm varies from the lower to the upper limit as follows:—

	Feet.
Lower boundary	3,200
Farm buildings	3,600
Upper boundary	3,900

2. **Rainfall and character of the season.**—The following table shows the rainfall registered during the year under report:—

Months.	Rainfall in inches.		Number of rainy days.	
	Normal.	Actual.	Normal.	Actual.
1940.				
April	2·60	1·50	7	4
May	10·48	4·36	19	16
June	18·40	61·78	21	18
July	26·54	37·41	26	29
August	25·23	20·36	26	20
September	12·69	5·83	17	14
October	6·40	0·51	4	3
November	0·20	0·29	2	2
December	0·42	0·83	1	4
1941.				
January	0·15	0·09	1	1
February	1·56	0·45	6	3
March	0·56	..	2	..
Total ..	105·23	88·41	132	114

The rainfall was much below normal during April and May 1940, but this did not have much adverse effect on the standing crops. The rainfall during the next 3 months was ample but the precipitation during September and October was again far below normal as a result of which irrigation had to be resorted to on a greater scale for the vegetable garden, potato and flax. Scanty rainfall in February and nothing in March 1941 delayed the sowing of maize for the 1941 crop.

3. **Establishment.**—Babu Sujyoti Nath Chatterji held charge of the farm in his capacity as Superintendent of Agriculture, Darjeeling, from the beginning of the year till the 1st July 1940, on which date the post of Superintendent of Agriculture, Darjeeling, was abolished consequent on the retirement of Mr. H. R. Edmunds, M.B.E. A new post of District Agricultural Officer, Darjeeling, was created from the 2nd July 1940 and Babu Sujyoti Nath Chatterjee was in charge of the farm as District Agricultural Officer, Darjeeling, till the 28th October 1940. Babu H. K. Basak took over charge on the 29th October 1940 and held the post till the end of the year.

Babu G. M. Thoolungh, Babus Jibbir Karthak and P. T. Wangphel worked as clerk, store-keeper and Fieldman Demonstrator, respectively, throughout the year.

4. **Operations during the year.**—(*A*) *Experimental operations.*—The experimental operations were as detailed below:—

(*a*) Varietal test with maize with a view to find out the superior types and eliminate the inferior ones.

The results are tabulated below:—

Variety.	Area in acres.	Total yield of grains.			Yield per acre.		
		Md.	sr.	lbs.	Md.	sr.	lbs.
White Flat ..	0·70	16	37	1,354	24	7	1,934
Yellow Flat ..	2·25	45	22	3,644	20	20	1,620
Yellow Round ..	2·10	37	7	2,974	17	28	1,416
White Round ..	1·00	23	35	1,910	23	35	1,910

The outturn of white flat variety is the highest.

(*b*) *Cultural test with maize.*—Terraced *versus* unterraced land:—

	Variety.	Area in acre.	Total yield.		
			Md.	sr.	lbs.
Terraced area	.. Golden Beauty ..	1·00	23	28	1,896
Unterraced area	.. Ditto ..	1·00	25	5	2,010

This year the outturn from unterraced area is more than that of terraced area, while it was the reverse last year.

(*c*) *Elevation experiment with paddy.*—Results obtained are given below:—

Height above sea level in feet.	Variety.	Area in acres.	Total yield of grains.			Yield per acre.		
			Md.	sr.	lbs.	Md.	sr.	lbs.
3,400—3,500	Jhapaka ..	1·25	32	1	2,562	25	23	2,046
3,200—3,300	Ditto ..	2·50	49	3	3,926	19	25	1,570

The outturn in the lower elevation is less than that of the higher elevation as it was also last year; further the crop in the lower elevation was

badly attacked by leaf rollers, which also contributed to some extent to the low outturn obtained.

(*d*) *Paddy seed-bed test.*—Seed rate of 9 maunds *versus* 3 maunds per acre.

Actual area of seed-bed sown :—

		Md.	sr.
(*i*) One-sixth acre	.. ..	1	20 seed
(*ii*) Ditto	.. ..	0	20 ,,

Variety.		Area transplanted in acres.	Total yield of grain.			Yield per acre.		
			Md.	sr.	lbs.	Md.	sr.	lbs.
(i) Toul	..	1·50	35	34	2,868	23	36	1,912
(ii) Do.	..	0·50	10	2	804	20	4	1,608

This year the result obtained from the higher seed rate is more than that from lower seed rate, but it was the reverse during the previous two years.

This experiment will be discontinued from the next year.

(*e*) Varietal test with soybeans :—

Results.

Variety.			Area in acres.	Total yield.			Yield per acre.		
				Md.	sr.	lbs.	Md.	sr.	lbs.
Green	..	..	1·00	7	1	562	7	1	562
Barmali	..	..	0·70	4	21	362	6	19	518

(*f*) Experiment of Assistant Fibre Expert, Bengal, on flax to find out the behaviour of exotic type and its yield when sown in different months.

This experiment was conducted up to November 1939 last year and the monthly sowings were discontinued since then, as it was found by results so far obtained that October was the most suitable month for sowing of flax. Hence one plot (0·25 acre) only was sown in October 1940. But as the Director of Agriculture, Bengal, during his last visit to the farm in November 1940 directed that the monthly sowing should continue for another year to obtain definite results, sowings were done on 0·05 acre each month from November 1940 to March 1941.

The crops sown in November 1940 to March 1941 are still standing in the fields.

The crop sown in October 1940 has only been harvested and the result obtained is as follows :—

Variety.	Area sown in acre.	Time of sowing.	Total yield of grain.			Total yield of stalk.		
			Md.	sr.	lbs.	Md.	sr.	lbs.
J. W. S. Liral Monarch.	0·25	October 1940.	2	16	192	16	0	1,280

(*B*) *Non-experimental operations.*—The following is the list of non-experimental crops grown on the farm during 1940-41 and the areas and yields of all the crops are also given below:—

Name of crop.	Area in acres.	Total yield of grain.			Total yield of straw.		
		Md.	sr.	lbs.	Md.	sr.	lbs.
Maize	8·95	222	37½	17,835	..		..
Marwa	1·20	30	15	2,430	..		..
Mashyem	3·20	23	33	1,906	120	0	9,600
Kalai Dal	6·55	32	0	2,560	..		..
Soybean	2·25	16	10	1,300	..		..
Sugarcane Co. 213 ..	0·50	29	6 (gur.)	2,332 (gur.)			
Red Mauritius ..	0·25	..		..	Totally failure due to damage by white ants.		
Potato, white Kidney shape	1·00	33	27 (tubers).	2,694 (tubers.)			
Wheat, P. 52	2·00	Not yet harvested.					
Oats	0·50						

Besides the above, the following two crops were also grown on the farm:—

Thatching grass.—The area under this grass was 1·25 acre and 120 bundles of grass have been obtained. These have been kept for repair of cooly-sheds later on.

Napier grass.—Details of area put under this grass and the outturn obtained are given below:—

Area in acre.	Total weight of green grass.			Number of cuttings.
	Md.	sr.	lbs.	
0·40	108	30	8,700	94,500

Fruit garden.—

Area in acres.	Total cost of cultivation.			Total sale-proceeds.		
	Rs.	a.	p.	Rs.	a.	p.
7·50	692	9	0	476	10	9

Oranges are the main crop in the fruit garden and due to bumper crop obtained this year in Sikkim and the bustis, the price was very low.

Vegetable garden.—A large variety of foreign and local vegetables were grown on the farm as usual for sale. Besides vegetables, a large number of seedlings of different vegetables and some seeds too were also sold to the local public. The statement below gives the list of

vegetables grown, the amount spent for cultivation and the total sale-proceeds obtained during 1940-41 :—

Total area in acres.	Total cost of cultivation.	Total sale-proceeds.
	Rs. a. p.	Rs. a. p.
3·00	1,101 5 3	1,574 14 6

Name of vegetables grown :—

1. Cabbages.
2. Cauliflowers.
3. Carrots.
4. Knol Khol.
5. Lettuce.
6. Swedes.
7. Beetroot.
8. Onion.
9. Leeks.
10. Celery.
11. Parsnip.
12. Parsley.
13. Borecole and some others.

Besides the above, 10 acres were put under Government of India flax for seed.

Sowing commenced on 12th November 1940 and finished on 29th November 1940. The percentage of germination was as low as 15 per cent., hence 15 maunds per acre were sown. There was a fair crop all over the fields but in some plots the crop was quite good but outturn of seed is not likely to be satisfactory. The crop is not yet ready for harvest.

5. **Cultivation on economic basis.**—Maize and soybean were grown on an area of 2·25 acres on an economic basis and the results obtained are given below :—

Name of crop.	Area in acres.	Yield of grain.			Cost of cultivation.	Value of produce.
		Md.	sr.	lbs.	Rs. a. p.	Rs. a. p.
Maize ..	2·25	68	9	5,458	123 15 3	307 0 3 (Profit or loss).
Soybean ..	..	22	10½	1,781	69 11 0	111 5 0 (See Appendix I.)

6. **Cultivation on Borga system.**—Detailed statement showing the crops grown by Borgadars, area, farm's share of produce, etc., is given below :—

Name of crop.	Area in acres.	Farm's share of produce.				Farm's share of straw.			
		Md.	sr.	ch.	lbs.	Md.	sr.	ch.	lbs.
Maize	10·8	138	34	8	11,109	..			..
Paddy	12·8	90	19	0	7,238	172	2	8	13,765
Marwa	12·8	130	29	0	10,458	Straw worth Rs. 40 The straw was not harvested but sold for grazing by mules.			

7. **Distribution of seeds, etc.**—A statement is given below showing the total distribution of seeds, etc., from the farm during the year under report:—

A. General agricultural crop seeds.

Name of seeds.	Quantity. Mds.	sr.	ch.	lbs.	Number.
Maize	335	9	12	26,819½	..
Marwa	0	1	4	2½	..
Soybean	15	26	1	1,252	..
Kalai Dal	0	22	4	44½	..
Mashyem	0	4	0	8	..
Wheat	16	18	10	1,317¼	..
Flax	0	30	0	60	..
Tung oil seed	2	0	0	160	
Napier grass cuttings	..		..	..	124,500

B. Vegetable seeds and seedlings.

Name of vegetables.	Number of seedlings.
Cauliflowers	650
Cabbages	275
Knol khols	75
Lettuce	75
Beetroot	50
Seeds of different kinds of vegetables	228 lbs.

C. Fruit trees.

Name of fruit trees.	Nos.
(1) Pineapple suckers	580
(2) Banana Hooks	12
(3) Strawberry suckers	2,308
(4) Pear trees	32
(5) Peach trees	43
(6) Guava trees	8
(7) Plum trees	47
(8) Raspberries	23
(9) Kagzie Lemon	34
(10) Tree Tomato	20
(11) Mulberries	11
(12) Pomegranate	2
(13) Pomelos	4
(14) Grape fruit	2
(15) Papaya	40

8. **Cattle.**—There were 15 bullocks throughout the year for farm work and their condition was on the whole quite good.

When not required for farm work, ploughs with bullocks were let out on hire to Borgadars and Khasmahal tenants in the neighbourhood and a sum of Rs. 189 was realised during the year.

9. **Fishery and poultry.**—There was no fishery or poultry in the farm.

10. **Practical training in Agriculture.**—Two apprentices were taken in for practical training with effect from the 3rd October 1940 and they continued till the end of the year. They were employed as ordinary labourers on the farm and received wages just like other labourers. They have had now sufficient experience about the practical side of the farm work as well as how to maintain different farm registers, such as cultivation work, stock book, cash book, etc. There is as yet no departmental Demonstrator in the district of Darjeeling and these apprentices may be given a chance when the post of a Demonstrator or two be sanctioned for this district. For the posts of Demonstrators in this district, we should have hillmen who can mix and talk freely with the local people and these apprentices, who come from this district, will do quite well as departmental Demonstrators.

Besides training of these apprentices, local cultivators who visited the farm from time to time were also shown round the farm and were given necessary instructions about growing of improved crops and method of cultivation.

11. **Manufacture of artificial farmyard manure.**—Altogether 1,936 maunds of this manure were manufactured during the year under report. Out of this 480 maunds were utilised during the year in the vegetable garden and the rest is now being applied to the maize area.

12. **Conference, exhibition, etc.**—No conference or exhibition was held on the farm during the year under report.

13. **Visits and inspections, etc.**—The farm was visited during the year by the following departmental officers:—

Director of Agriculture, Bengal, Principal, Bengal Agricultural Institute, Live-Stock Expert, Bengal, Agricultural Engineer, Bengal, Assistant Fibre Expert, Bengal, Deputy Director of Agriculture, Northern Circle, Physiological Chemist, Bengal, Economic Botanist, Bengal, Entomological Assistant, Bengal, Horticultural Officer and the Assistant of the scheme for the extension of work on insect pests on sugarcane.

The following officers of other Government departments also visited the farm:—

Deputy Director of Sericulture, Deputy Director of Industries and the Divisional Forest Officer, Kalimpong.

Besides the above, we had visits from His Excellency the Governor of Bengal who was accompanied by his Private Secretary and the Subdivisional Officer, Kalimpong. The Hon'ble Minister for Agriculture, Mr. G. Morgan, C.I.E., M.L.A., Mr. J. N. Gupta, I.C.S. (Retired), Justice Nassim Ali, Mr. C. H. Dobson, Manager, Tukvar Tea Estate, Dr. Woodford, Adviser of the Indian Tea Association, Captain Kanbir Subba, Mr. Lal Singh Subba and several others.

F. ISLAM WAHEED,

Deputy Director of Agriculture, Northern Circle.

Financial Statement of the economic cultivation of the farm for the year 1940-41.

Debit.	Amount. Rs. as. p.	Credit.	Amount. Rs. as. p.
1. Depreciation of cattle, 10 per cent.	14 9 9	(1) Value of produce	643 8 3
(2) Depreciation of improved implements, 50 per cent.	1 0 6	(2) Residual value of manures ..	20 12 6
			664 4 9
(3) Depreciation of country implements, 50 per cent.	4 5 0	Loss	225 9 6
(4) Interest on capital (cattle and implement), 5 per cent.	8 4 3		889 14 3
(5) Supervision charges—			
One-third of pay of District Agricultural Officer and pay of 1 Assistant Demonstrator.	325 5 0		
(6) Rent, rates and taxes ..	46 6 0		
(7) Cost of seeds	75 0 9		
(8) Cost of manures	58 2 0		
(9) Residual value of manures of previous years.	4 8 0		
(10) Cultivation and production cost ..	352 5 0		889 14 3
	889 14 3		

(1) Gross cropped area	28·29
(2) Economic area	7·66
	Rs. as. p.
(3) Total value of cattle	541 10 3
(4) Total value of improved implements	38 8 0
(5) Total value of country implements	31 15 6
(6) Total amount of capital	612 1 9
(7) (a) Pay of the District Agricultural Officer in charge	2,760 0 0
(b) Pay of one Overseer	284 13 0

Annual Report in connection with the Agricultural Improvement Works in the Khasmahal blocks of the district of Darjeeling for the year 1940-41.

Introduction.—The Agricultural Improvement work in the Khasmahals was first started in the year 1920-21 under Government order No. 3215 L.R., dated the 2nd April 1919, and since then work has been going on without a break on a year to year sanction basis. The work is mainly concentrated in the Khasmahal blocks of Pedong, Gitbyong, Nimbong and Yok Primtam in the Kalimpong subdivision.

Charge.—Mr. S. N. Chatterjee was in charge from 1st April 1940 to 1st July 1940 as Superintendent of Agriculture, Darjeeling, during the absence on leave of Mr. H. R. Edmunds, M.B.E. With the retirement of Mr. Edmunds, the post of Superintendent of Agriculture, Darjeeling, was abolished and a new post of District Agricultural Officer, Darjeeling, was created and Mr. Chatterjee held charge as District Agricultural Officer from the 2nd July 1940 to 28th October 1940. Babu H. K. Basak took over charge on the 29th October 1940 and continued till the end of the year.

Babu Jitbahadur Subba and Daniel Juribu continued to work as the Agricultural Sub-Overseers throughout the year. Their posts are temporary and are sanctioned from year to year. I think, it is high time that the work be put on a permanent basis and the posts made permanent.

Babu Daniel Juribu was unfortunately bitten by a rabid dog in January 1941 while out on tour and had therefore to be on special leave for a month from 21st January 1941 in order to undergo anti-rabic treatment.

The Agricultural Sub-Overseers were on tour for more than 20 days every month, visiting the different blocks for distributing seeds, etc., giving necessary advice and instruction to the Khasmahal tenants and carrying on propaganda work.

Babu Jitbahadur Subba was on tour for 259 days and Babu Daniel Juribu for 237 days during the year under report.

Demonstrations.—The following programme was followed during the year under report:—

(*a*) Introduction of improved varieties of maize, wheat and other seeds.

(*b*) Introduction of the cultivation of improved variety of sugarcane, viz., Co.213 and *gur*-making.

(*c*) Introduction of fruit trees and vegetable cultivation.

(*d*) Introduction of Napier grass as a fodder crop.

(*e*) Introduction of ideal manure pits for proper conservation of cowdung manure and preparation of artificial farmyard manure.

Details of work done—(*a*) (1) *Maize.*—This is the most important crop which is practically grown by every cultivator. It is the chief

food crop of the hill people and there is also a good market for this as a food for horses, mules and cattle. It is also used to some extent for manufacture of country liquor.

Not more than 4 maunds of improved seeds could be distributed during the year for want of sufficient funds. The demand for the improved seeds from the cultivators is much more than what we can supply from the limited funds at our disposal.

The results obtained from the seeds distributed during 1939-40 are given in Appendix I and the statement showing the distribution of seeds during 1940-41 is given in Appendix II.

As will be seen from the results given in Appendix I, the cultivators are getting better outturn from the improved seeds than from the local varieties and it is estimated that the area under improved varieties of maize is now about 32,600 acres out of the total area of 49,200 acres under maize in the district. Even at the modest estimate of 1 maund per acre as the increased outturn obtained by the cultivators by the cultivation of improved varieties of maize the increased income accruing to the cultivators in a year comes to Rs. 1,30,400 at Rs. 4 per maund.

(*a*) (2) *Wheat.*—Eight maunds of Pusa 4 wheat seeds were distributed during the year and the quantities distributed and results obtained block by block, are given in Appendix IV.

This improved variety of wheat is much liked by the cultivators on account of the bigger size of the grains and superior quality. The outturn obtained this year was below the normal due to late sowing and on account of drought at the time of sowing and during the growth of the crop.

It is estimated that out of 3,400 acres under wheat in the district, about 2,594 acres are now under improved varieties.

(*a*) (3) *Rai and Tori seeds.*—One maund of improved Tori seeds and one maund twenty seers of improved rai seeds, which were supplied by the Second Economic Botanist, Bengal, for free distribution, were also distributed amongst the khasmahal tenants, but the outturn obtained was rather poor owing to late sowing due to drought. Tori seed was distributed amongst 49 cultivators and the total outturn obtained by them was only 12 maunds 15 seers; while Rai seed was distributed amongst 112 persons and the total outturn obtained by them was only 16 maunds 34 seers.

(*b*) *Sugarcane.*—No cuttings were distributed during the year under report from the khasmahal grant but 6,000 cuttings, enough for 1·5 acre, were given free by the Agricultural Department to the Kalimpong Agricultural Association, which was formed in October 1940 and these cuttings were distributed amongst 12 khasmahal tenants in the Dongra Block. They have only recently been planted and the results will be available next year.

The cultivators, who hade in previous years received cuttings of this improved variety of cane continued to grow sugarcane crops and the statement, block by block, showing the number of cultivators using the crushing mill and pans provided by the Khasmahal Department, the

number of days they were used and the quantity of *gur* manufactured by them is given in Appendix VI.

It has been found that this cane is far superior to local ones and gives a better outturn of *gur*, but this is a hard cane immune from the attacks of jackals, and is not suitable as a chewing cane. At present quite a large quantity of *gur* is imported from the plains and it is not always of a good quality. Hence there is much scope for the extension of the area under sugarcane in the hills for the manufacture of *gur* to meet the local demand. This cane is also grown on the Government Farm at Kalimpong and the *gur* manufactured finds a ready market, specially amongst the *bhadralogs*, on acount of its superior quality.

(*c*) *Fruit trees and vegetables*.—The distribution of fruit trees and vegetable seeds continued to be an important item in the programme of demonstrations as in previous years. As a result of these demonstrations the cultivation of English vegetables, such as cauliflowers, cabbages, knolkhol, etc., is increasing gradually and the area under fruit trees is also on the increase.

A statement showing the number of different kinds of fruit trees distributed during 1940-41 is given in Appendix V.

It will be seen that the number of fruit trees distributed during the year under report is far too small as compared with the number distributed in the previous year. This was mainly due to paucity of funds at our disposal.

(*d*) *Introduction of Napier grass as a fodder crop*.—It has been found by experience that the cattle should have some nutritious green fodder as food throughout the year, if possible, in order to maintain them in a fit condition and it is no use importing good breeding bulls to improve the cattle unless some arrangement is also made simultaneously to provide them with good and nourishing fodder. It has now been established beyond doubt that Napier grass is the best fodder crop so far available. If irrigation be possible during the dry months, an outturn of 100 maunds of green grass may be available per bigha ($\frac{1}{3}$ acre) every 2 months throughout the year. On an average with proper manuring and irrigation, a good cutting may be expected to average 120 maunds per bigha or say 650 maunds of first class fodder per bigha per annum. With irrigation, up to double this quantity may be expected.

During the year under report 69,500 cuttings were purchased from the Government farm from the khasmahal grant and distributed amongst a very large number of khasmahal tenants to give an opportunity to as many persons as possible to grow this valuable and important fodder crop. Besides these, another 30,000 cuttings were given by the Agricultural Department free for distribution amongst the khasmahal tenants. The cultivators are now observed to be taking some interest in the growing of this valuable fodder crop and the area under this crop is now estimated to be about 20 acres.

A statement showing the distribution of Napier grass cuttings during 1940-41, block by block, is given in Appendix III.

(*e*) *Introduction of ideal manure pits and preparation of artificial farmyard manure*.—The cultivators usually keep the cowdung manure in any place that is available without any shed over it and as a result of this, much of the manurial value is lost due to exposure to the sun

and the rain. The manure should be kept in a pit over which there should be a shed in order to preserve it in a good condition. Hence propaganda to bring home this fact to the cultivators formed an important item of work in Darjeeling district where rainfall is also high.

Sometimes it is found that the dung available is not quite enough to meet the total demand for manure. Hence, in order to supplement the supply of manure, artificial farmyard manure is being regularly successfully manufactured in the Government farm by decomposing all sorts of organic matter, such as weeds, etc., that are thrown away by making heaps of them and pouring cattle urine mixed with ten times of water on the heaps to decompose the matter. Some bone-meal is also added to make it a complete manure. This is undoubtedly another source of manure obtained from refuse matters with not much labour and cost. Active propaganda has therefore been carried on to teach the cultivators how to manufacture this manure and thus to increase the quantity of manure for his use at a small cost. The progress is, however, slow owing to the general conservatism and apathy of the cultivators.

A list of ideal manure pits made during 1940-41 is given in Appendix VII.

Practical demonstrations.—Whenever the khasmahal tenants visited the Government farm, they were shown round the farm and given necessary instructions and advice regarding the cultivation of improved crops, use of manure and fertilisers and the improved methods of cultivation.

Practical demonstrations with improved implements, such as, ploughs, maize shellers, sugarcane crushing mill, etc., were also arranged when convenient.

General propaganda work.—Whenever the khasmahal blocks were visited, in addition to the inspection of the improved crops being grown by the tenants, necessary advice and instructions about the improved methods of tillage, conservation of manure, preparation of artificial farmyard manure, remedial and preventive measures to be adopted against fungus and insect attacks, etc., etc., were also given freely.

Khasmahal farms, etc.—A private farm known as the Mirik School and Busty Agricultural Demonstration Farm was started in Mirik in Kurseong subdivision which is under the management of a committee formed by the Mirik M. E. School Committee. The farm is in charge of a Demonstrator, Babu Padambahadur Gurung, who was trained for some time at the Government Farm at Kalimpong.

The farm was started as a result of a meeting held in Mirik Bazar on the 14th June 1940 under the presidency of the Subdivisional Officer of Kurseong and attended by the Superintendent of Agriculture, Darjeeling, Khasmahal Officer, Darjeeling, District Inspector of Schools, Darjeeling, Rev. H. C. Duncar, Superintendent of Mission Schools, Mr. C. deG. Curry, Manager, Thurbo Tea Estate, Mr. A. J. Dewan, District Physical Organiser, Darjeeling, and several other local gentlemen interested in improvement of agriculture. The area of the

farm is only 2 acres, 1 acre being provided by the Khasmahal Department at a nominal rent and 1 acre being given by Mr. C. deG. Curry, free of rent.

Various kinds of vegetable seeds were given free for growing on this farm by the Department of Agriculture from the Government Farm at Kalimpong and some seeds were also purchased from the khasmahal grant. The crops so far obtained were quite satisfactory and the local cultivators are taking keen interest in the activities of this farm, which is the first of its kind in the district.

Thanks are due to Mr. C. deG. Curry, Manager of Thurbo Tea Estate, for the gift of one acre of land, free of rent, and for the keen personal interest he is taking in making it a success.

The present Subdivisional Officer of Siliguri, Mr. S. Gupta, B.C.S., is also very keen on agricultural improvement works and due to his initiative a scheme for the establishment of 3 khasmahal farms in the Siliguri subdivision was sanctioned by the Board of Revenue during the year under report, but unfortunately, when the Government order was received, it was too late to start the farms during this year. Hence it was decided to start the farms at the commencement of the next year, viz., 1941-42 and the farms have since been started and a demonstrator has also been appointed to look after the farms, something tangible will be done for the improvement of agriculture in the Siliguri subdivision.

Exhibitions.—Two exhibitions were held in the district during the year under report, viz., the Darjeeling Flower Show and the Bijanbari Mela and Exhibition, in which departmental improved seeds, etc., were exhibited and the enquiries from the cultivators and others visiting the exhibitions were attended to. There was a long attendance of cultivators at the Bijanbari Exhibition and prizes were given to all persons who sent exhibits of cereals, pulses, fruits, handiwork, etc., etc.

The Agricultural Department made a contribution of Rs. 100 to the Darjeeling Flower Show Committee and a contribution of Rs. 50 to the Bijanbari Exhibition Committee. Besides these, a sum of Rs. 50 was also given by the department for awarding prizes for the best exhibits at the Bijanbari Exhibition. Mr. Goenka of Goenka and Co. of Kurseong and Darjeeling was instrumental in organising the Bijanbari Exhibition and he spent a large sum to make it a success. He also awarded prizes to each and every person who sent in any exhibit in order to give all some encouragement.

The Exhibition was opened by Mr. Stoddart and the prizes were distributed by the Deputy Commissioner, Darjeeling, on the concluding day.

The Khasmahal Sub-Overseers attended the exihibitions and attended to the queries of the visitors.

Character of the season.—The rainfall during April and May 1940 was less than usual and it affected the outturn of maize to some extent. During June, July and August the rainfall was plenty and it was good for the standing crops generally. During September and October again the rainfall was far below normal and this delayed the

sowing of *rabi* crops to some extent and had also some adverse effect on the growth and outturn of the *rabi* crops. Very little rain in February and none in March 1941 delayed the sowing of maize for the 1941-42 crop.

Cattle.—The health of the cattle was on the whole good throughout the year under report.

Acknowledgments.—Thanks are due to the Deputy Commissioner, Darjeeling, Subdivisional Officers of Kurseong, Kalimpong and Siliguri, and the Khasmahal Officers of Darjeeling and Kalimpong for their kind assistance and interest in the works of agricultural improvements. Managers of Government Cinchona Plantations and several Tea Estate Managers have also taken keen interest and helped us in our work. Special mention may be made of Mr. C. deG. Curry of Thurbo Tea Estate and Mr. E. H. Dobson of Lebong Tea Company, Tukbar Estate, who have taken a prominent part in the work of agricultural improvement. Many Khasmahal Block Mondals took an active interest in our work and were of great help to us.

Babus Daniel Juribu and Jitbahadur Subba, the Agricultural Sub-Overseers, worked hard and quite satisfactorily throughout the year.

A statement showing the budget grant and the account spent for these works during 1940-41 is given in Appendix VIII.

F. ISLAM WAHEED,

Deputy Director of Agriculture, Northern Circle.

APPENDIX I.

Statement showing the results of cultivation of Maize.

Name of block.	Name of grower.	Area in acres.	Outturn of Government Farm maize.	Outturn of local maize.
			Mds. sr. ch.	Mds. sr. ch.
Samthar ..	Manbir Durzie ..	0·50	12 0 0	10 0 0
Do. ..	Chqndraman Tamang ..	0·25	6 0 0	5 20 0
Do. ..	Ramphey Rai ..	0·12½	5 0 0	4 0 0
Do. ..	Bhutay Bhujel ..	0·12½	5 0 0	4 0 0
Do. ..	S. T. Fodeng ..	1·00	16 0 0	14 0 0
Do. ..	Patin Lepcha ..	0·25	6 0 0	5 30 0
Do. ..	Pasik Lepcha ..	0·25	6 0 0	5 30 0
Do. ..	Chochiring ..	0·25	5 35 0	5 20 0
Do. ..	Dozie Dobo ..	0·25	6 20 0	6 0 0
Kongkaybong ..	Dhanrup Limbu ..	0·25	6 0 0	5 20 0
Do. ..	Kisnabir Pradhan ..	0·25	6 10 0	5 10 0
Do. ..	Sukraj Limbu ..	0·25	6 20 0	6 10 0
Do. ..	Kanaksing Limbu ..	0·25	7 0 0	6 10 0
Dc. ..	Dhanbahadur ..	0·25	6 10 0	6 5 0
Jhepi ..	Rajbahadur Limbu ..	0·25	6 20 0	6 5 0
Do. ..	Hangphulla Limbu ..	0·25	7 10 0	6 20 0
Do. ..	Chandaram Limbu ..	0·25	6 20 0	6 10 0

APPENDIX II.

Statement showing the distribution of maize seeds in 1940-41.

February 1941.

Name of block.	Name of grower.	Quantity of seed. Mds.	sr.	ch.
Yok Primtam	Dachet Lepcha	0	3	0
Ditto	Nandalal Brahman	0	3	0
Ditto	Aitaraj Limbu	0	3	0
Ditto	Rangalal Mondol	0	3	0
Ditto	Manarath Brahman	0	3	0
Seokhbir	D. Ongthup	0	3	0
Ditto	Harkabahadur Limbu	0	3	0
Ditto	Sukhman Limbu	0	4	0
Ditto	Karandhoj Limbu	0	3	0
Ditto	Kharkkadhoj Rai	0	5	0
Kankibong	Narpati Brahman	0	5	0
Ditto	Barsing Lepcha	0	2	0
Pala	Lachiman Brahman	0	4	0
Ditto	Ramdal Rai	0	4	0
Ditto	Santabir Rai	0	3	0
Ditto	Dalbir Rai	0	2	0
Ditto	Mahendra Limbu	0	2	0
Ditto	Gambidhoj Rai	0	2	0
Lolay	Parambahadur Rai	0	1	0
Ditto	Takbuchiring Lepcha	0	5	0
Ditto	Jutising	0	2	0
Ditto	Gangalal Brahman	0	2	0
Ditto	Nadot Lepcha	0	3	0
Ditto	Manbir Rai	0	1	0
Ditto	Maya Raini	0	2	0
Ditto	Ramlal Brahman	0	2	0
Ditto	Prabhusing	0	5	0
Dalapchand	Bicharsing Rai	0	2	0
Ditto	Chherenji Bhotia	0	2	8
Ditto	Baljit Rai	0	2	8
Ditto	Bisnumaya Chetrini	0	2	0
Payung	Biraj Gurung	0	3	0
Ditto	Nophi Bhotia	0	3	0
Ditto	Kingagechin Bhotia	0	2	0
Ditto	Makarlal Brahman	0	3	0
Ditto	Chengba Tamang	0	2	8
Pedong	Lobzang Bhotia	0	3	0
Ditto	Ongai Bhotia	0	4	0
Ditto	Dilprasad Pradhan	0	4	0
Ditto	Semlal Durzie	0	5	0
Ditto	Budhiman Tamang	0	3	0
Ditto	Barmalal Brahman	0	3	0
Ditto	Sukuni Bhotiani	0	2	0
Ditto	Kirtiman Pradhan	0	2	0
Sakyong	Pinchho Bhotia	0	5	0
Sundak	Sinkhu Lepcha	0	2	0
Ditto	Chhongpen Lepcha	0	2	0
Ditto	Siram Rai	0	3	0
Git-Dubling	Srikrishna Brahman	0	5	0
Ditto	Bishunlal Brahman	0	4	0
Ditto	Dipbahadur Thakuri	0	6	0
Ditto	Sabu Lepcha	0	3	0
Ditto	Kusmakhar Brahman	0	2	0

APPENDIX III.

Statement showing the distribution of Napier grass cuttings, block by block, during 1940-41.

Name of block.	No. of cuttings.
Dongra	21,180
Mission	1,000
8th mile	1,000
Durpindara	1,000
Bom	1,800
Sindipong	4,600
Pudung	500
Chobo	2,000
Lopchu	3,150
Takling	1,150
Sigrimtam	3,400
Pubung	3,000
Chota Mangwa	1,100
Tamsang	500
Borbotary	750
Rashihat	700
Chegra	900
Lingding	1,000
Dabaipani	1,000
Takdah	1,200
Bhalukhop	700
Sangser	100
Dongra	450
Ichay	500
Sindipung	100
Dalapchand	500
Payung	900
Pedong	1,500
Sakyong	1,000
Majhuwa	1,000
Singbhandara	2,400
Dangia	1,900
Eelling	3,100
Lamagaon	2,000
Kaijalia	3,700
Jhepi	3,000
Kankebong	6,000
Hatta	1,300
Eimbic	2,000
Kalimpong	1,000
Pedong	2,000
Kagay	1,000
Bom	14,200
Dongra	5,000

APPENDIX IV.

Statement showing the results of cultivation of wheat, Pusa No. 4, during 1940-41.

Name of block.	Quantity of seed distributed. Mds.	sr.	ch.	Outturn obtained. Mds.	sr.	ch.
Bom	1	5	0	11	27	0
Sindipong	0	5	0	0	30	0
Dongra	0	8	0	2	0	0
Pudung	0	2	0	0	10	0
Chhobo	0	21	8	4	26	0
Yangmakum	0	25	0	6	30	0
Manzing	0	10	0	3	25	0
Lopchu	0	10	0	2	0	0
Takdah	0	10	0	2	0	0
Singrimtam	0	5	0	1	0	0
Manydara	0	5	0	1	0	0
Dabaipani	0	5	0	1	0	0
Chhota Mangwa	0	5	0	1	0	0
Majua	0	2	8	0	20	0
Sinbongdara	0	2	8	0	20	0
Dangia	0	2	8	0	15	0
Relling	0	2	8	0	20	0
Lamagaon	0	2	8	0	20	0
Kaijalia	0	2	8	0	16	0
Jhepi	0	2	8	0	22	0
Kogkibong	0	10	0	1	33	0
Hatta	0	2	8	0	15	0
Rambick	0	2	8	0	20	0
Sirikola	0	7	8	1	15	0
Payung	0	21	0	4	12	0
Pedong	0	17	0	4	3	0
Sakyong	0	17	0	4	7	0
Dongra	0	30	0	7	8	0

APPENDIX V.

Statement showing the number of fruit trees distributed during 1940-41.

Name of fruit trees.	Number.
Papaya	33
Plum	7
Guava	2
Peach	8
Pear	4
Raspberry	4

APPENDIX VI.

Statement showing the use of the Sugarcane Crushing Mill and manufacture of Gur.

Name of block.	No. of cultivators using the mill and pans.	No. of days the mill and pan were used.	Quantity of Gur manufactured. Mds. sr. ch.
Sindipuug	6	29	39 20 0
Pudung	3	13	18 0 0
Ichay	3	11	16 0 0
Blm	5	13½	16 30 0
Payung	5	11	6 20 0
Kagay	4	18	17 30 0

APPENDIX VII.

Statement showing the number of ideal manure pits made.

Name of block.	Name of cultivator.	No. of pits.
Lolay	Paget Lepcha	1
Lolay	Prabhusingh Mondsol	1
Pala	Karnabir Rai	1
Yokprimtam	Jashbahadur Subba	1
Seokhbir	Chhiring Lepcha	1
Kankibong	Passang Lepcha	1
Samalbong	Debu Brahman	1
Sinzie	Nandalal	1
Sinzie	Narbir Rai	1
Samthar	Kubir Bhujel	1
Samthar	Dozie Sathap Lepcha	1
Yangmakum	Cuma Lepcha	1
Nov-Pabringtar	Jaspel Limbu	1
Nimbong	Manbir Tamang	1
Payung	Panvhavir Rai	1
Payung	Dhanpal Rai	1
Sunduk	Kangsaman Rai	1
Sunduk	Kitapsingh Rai	1
Sakyong	Jangbir Limbu	1
Sakyong	Sibi Rai	1
Pedong	Bhagirath Brahman	1
Pedong	Chandraman Rai	1
Pedong	Kirtiman Pradhan	1
Kashyem	Loku Bhotia	1
Kashyem	Saharsig Limbu	1
Kagay	Dinanath Brahman	1
Ladam	Tekdhan Rai	1
Lingsay	Bhagirath Brahman	1
Lingsaykha	Dhanlal Gurung	1

APPENDIX VIII.

Statement showing the details of the amount allotted for the continuance of the scheme in 1940-41.

Particulars of allotment.	Amount allotted. Rs. a. p.	Particulars of expenditure.	Amount allotted. Rs. a. p.
Compensatory allowance of the Superintendent and District Agricultural Officer, Darjeeling and peon.	640 0 0	Compensatory allowance to Superintendent of Agriculture, Darjeeling and District Agricultural Officer, Darjeeling and peon.	612 11 0
Salary of the two Agricultural Sub-overseers.	840 0 0	Salary of 2 Agricultural Sub-overseers.	840 0 0
Salary of 1 peon ..	156 0 0	Salary of 1 peon ..	156 0 0
Fixed travelling allowance of the 2 Agricultural Sub-overseers.	210 0 0	Fixed travelling allowance of the 2 Agricultural Sub-overseers.	194 4 0
Fixed travelling allowance of the peon.	38 0 0	Fixed travelling allowance of the peon.	37 8 0
Contingencies—Miscellaneous, Purchase and distribution of seeds and plants in the various khasmahal blocks in the district of Darjeeling.	350 0 0	Grain allowance of peon ..	1 0 0
		Grain allowance of peon ..	1 0 0
		A. Kalimpong Subdivision ..	188 9 6
		B. West Tista and Relling Estate.	161 4 6
Total ..	2,234 0 0	Total ..	2,191 5 0

APPENDIX IX.

Financial Statement of the Kalimpong Demonstration and Experimental Farm for the year 1940-41.

Debit. **Credit.**

Head of debit.	Amount of each sub-head.	Amount of each head.	Head of credit.	Amount of each sub-head.	Total amount.
	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.
1. Sale-proceeds in hand on 1st April, 1940 ..	....	....	1. Sale proceed in hand on 1st April 1941 ..	....	....
2. (A) Value of Farm produce on 1st April, 1940	2,200 0 0	2,200 0 0	2. (A) Value of Farm produce in hand on 1st April, 1941.	1,290 0 0	1,290 0 0
(B) Value of purchased stores and raw materials in hand on 1st April, 1940.	2,096 4 0	2,096 4 0	(B) Value of purchased stores and raw materials on 1st April 1941.	2,053 10 0	2,053 10 0
3. Amount of outstanding bills payable by the farm at the end of the year.	....	....	3. Amount of outstanding bills payable by the farm on 1st April 1940.	....	....
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year, *i.e.*, on 1st April 1940.	358 8 6	358 8 6	4. Amount of unrealised sale-proceeds due to the farm on 1st April 1941.	1,935 4 0	1,935 4 0
5. Value of tools and implements in hand on 1st April 1940.	1,012 12 0	1,012 12 0	5. Value of tools and plants and other Agricultural implements in hand on 1st April 1941.	1,317 1 0	1,317 1 0
6. Value of live-stock and furniture in hand on 1st April 1940.	1,439 6 0	1,439 6 0	6. Value of live-stock and furniture in hand 1st April 1941.	1,290 12 0	1,290 12 0
7. Amount drawn from local Treasury—			7. Amount paid into the Treasury—		
(A) Supervision—one-third pay of Superintendent and District Agricultural Officer and pay and allowance of staff.	3,068 0 0		(A) Credited in cash	7,065 9 6	
(B) Feed of Cattle	8 0 0		(B) Adjusted by B. T. C.	237 8 0	
(C) Purchase of seeds manures and implements	1,216 14 0		(C) Adjusted by stock transfer ..	386 13 6	7,689 15 0
(D) Wages of labourers	3,176 1 0		Total ..		15,576 10 0
(E) Wages of contingency menials ..	1,449 2 0		*Excess* Expenditure receipt, *i.e.*, loss ..	....	5,633 2 0
(F) Petty construction and repairs ..	200 0 0				
(G) Miscellaneous office expenses	1,069 7 9				
(H) Rent, rates and taxes	4,000 0 0				
(I) Cost of stores and seeds, etc., adjusted by stock transfer.	115 4 3	14,302 13 6			
Total ..	....	21,409 12 0			
Deduct on account of Petty Construction and Repairs	....	200 0 0			
NOTE.—Loss due to— (A) Heavy land rent paid annually. (B) High Supervision charges. (C) Low price of farm produce.		21,209 12 0			21,209 12 0

Annual Report of the Government Tobacco Farm, Rangpur, for the year 1940-41.

Introduction.—The total area of the Farm is 72 acres, of which 53·68 acres are under cultivation, while the rest of the area is occupied by roads, buildings, drains, etc.

Rainfall and character of the season.—

Months.	Actual rainfall in inches.	Number of rainy days.	Normal rainfall in inches.
1940.			
April	0·35	1	3·01
May	8·56	9	10·66
June	11·10	16	18·00
July	8·29	11	15·00
August	5·79	14	12·80
September	11·22	11	14·25
October	Nil	Nil	4·87
November	0·03	1	0·12
December	0·05	1	0·05
1941.			
January	0·13	1	0·50
February	0·40	2	0·50
March (up to 15-3-1941)	0·12	1	1·25
	46·04	68	81·90

The season was very disappointing this year for all the crops but tobacco. The rainfall was far below the normal affecting heavily upon both *kharif* and *rabi* crops.

The early sowings of *bhadoi* crops were facilitated by a few showers in last March, but the scanty rains in June, July and August told heavily upon their growth—specially on paddy. Total absence of rainfall in October enhanced early sowings of all *rabi* crops, but the crops suffered much from want of moisture in the soil from their very start resulting in poor outturns. Though some difficulty was felt at the time of transplanting of tobacco for the above reason the crop however recovered fully during the growing period. On the whole, the average tobacco crop of the district was fairly satisfactory.

Establishment.—Babu N. K. Roy, B.SC., was in charge of the Farm during the year under report. The other staff consisted of one Overseer, one Tobacco Curer and one clerk.

Operations during the year.—The cultivation operations during the year under review are given below :—

Kharif.—(1) Sunnhemp for green manure was grown in 7·99 acres and was ploughed down during the rains.

(2) Dharial *aus* paddy was grown in an area of 7·61 acres. The crop took a vigorous start but scanty and insufficient rains during the later period of growth told adversely upon the crop. A total yield of 125 maunds 4 seers of seeds was obtained.

(3) Maize (Kalimpong) for silage and fodder was grown in 10·96 acres. A total yield of 2,048 maunds of fodder was obtained of which 1,700 maunds were made into silage and the rest 348 maunds fed to the cattle.

(4) Maize (Kalimpong) for seeds was grown in 3·00 acres. An yield of 22 maunds 24 seers was obtained.

(5) Joar for fodder was sown in 4·00 acres at the successive intervals. The later crops suffered much from want of sufficient rain resulting in poor outturn. Only 552 maunds of fodder were obtained and fed to the cattle.

(6) Napier grass occupied an area of 2·00 acres, of which 0·50 acre was up-rooted as the stock became too old and another 0·25 acre was newly planted. A total yield of 1,024 maunds of fodder was obtained of which 710 maunds were fed to the cattle and the rest 314 maunds made into silage.

(7) Cowpea (Groit) for grazing was sown in 1·25 acres and was grazed upon by cattle.

(8) Rahar (Comilla) was grown in 3·61 acres. The crop was good in consideration of the peculiar season of this year. An yield of 34 maunds 5 seers was obtained.

(9) Second Economic Botanist's Cotton trial—289 F variety—was also tried this year in 0·20 acre only. The growth of the crop was satisfactory. An yield of 2 maunds 20 seers of seed cotton was obtained.

(10) Pineapple occupied an area of 0·10 acre. Fresh suckers from Kalimpong were planted last year to replace the old stock.

(11) Gingelly was attempted in 0·20 acre as a trial but the crop failed. It does not seem to suit this soil.

(12) Rhea occupied only 0·03 acre. Altogether 4 cuttings were taken and 19 seers 8 chattaks of fibres were obtained.

Rabi.—(1) Wheat (Pusa 12) was sown in 5·26 acres. The crop took rather a poor start for want of sufficient moisture in the soil. A few drizzles at the late period of its growth helped it to recover to a certain extent. The harvest is in progress.

(2) Lentil No. 5 was sown in 0·33 acre. The crop was fairly good. It is being threshed.

(3) Gram (Sabour 4) was sown in 1·09 acre, of which about 0·66 acre was preceded by cowpea for grazing. The portion preceded by cowpea was markedly superior to the other portion. The harvest is in progress.

(4) Darjeeling potato was grown in 0·33 acre. The crop was rather poor due to unfavourable weather. The harvest is in progress.

(5) Groundnut (A. H. 18) was sown in 0·20 acre as a trial. It does not seem to suit this soil.

(6) Oats for fodder were grown in 2·00 acres of which 0·33 acre was preceded by cowpea for grazing. The portion preceded by cowpea was far superior to the other portion. Th[illegible]

two portions of equal area (0·33 acre) were 57 maunds 32 seers and 24 maunds 13 seers of fodder respectively. A total yield of 194 maunds of fodder was obtained from 2·00 acres.

(7) Kalai for grazing was grown in 6·21 acres at successive intervals and was grazed by the cattle.

(8) Cowpea (Groit) for seeds was grown in 3·00 acres. It was sown early and took a good start but the fructification was hampered for want of moisture in the soil during later periods. An yield of 9 maunds 5 seers of seeds was obtained.

(9) Linseed (Berhampore) was sown in 2·00 acres. The crop was fair. Harvest and threshing are in progress.

(10) Tobacco was good this year as compared with the other crops. It suffered to a certain extent from want of moisture in the soil and some curling diseases at its early period of growth. Heavy irrigation was needed from the beginning. Irrigation had to be done 8 to 9 times in certain plots as against 3 to 4 irrigations (usual). No trouble was felt this year in raising the seedlings in seed beds from excessive rains. All the crop was harvested and is being cured.

The following varieties were grown in pure-line area of one cottah each. Tobacco seeds were raised from this area by bagging individual plants to maintain the purity of the strain :—

(1) Sumatra, (2) Manilla, (3) Pennsylvania, (4) Pennsylvania (new), (5) Connecticus Broad Leaf, (6) Connecticut Broad Leaf (new), (7) Burmese Havana, (8) Pusa Hybrid (old), (9) New Sumatra, (10) Aracan Cigar tobacco, (11) Zimmer Spanish, (12) Java, (13) Regrichi, (14) Murichi, (15) White Burley × Thotnampatty, (16) Sonadour × Pusa 142A, (17) Java × Ohio, (18) Hingli × Ohio, (19) I. P. 18, (20) I. P. 28, (21) I. P. 63, (22) Virginia, (23) Warnia, (24) Orinoco, (25) Yellow Prior, (26) I. P. 142-A, (27) Pusa 177, (28) Gold Dollar, (29) Bonanza, (30) Adcock, (31) Harrison Special, (32) Aysaluk, (33) Cavala, (34) Vuelta, (35) Vuelta-De-Abajo, (36) Ohio, (37) Peliu, (38) Gondin, (39) Keliu, (40) Bhengi, (41) Naskhal, (42) Patuakhol, (43) Cooch Behar Bhengi, (44) Sakuni Bhengi, (45) Padma pata, (46) Sindur Khota, (47) Adabari, (48) Gathia Bhengi, (49) Bhelengi, (50) Jati, (51) Chillakhal Bhengi, (52) Mena Bhengi, (53) Motihari, (54) Cooch Behar Motihari, (55) Bara-pata, (56) Hamaku, (57) Tongue, (58) Deli Tabak, (59) Maghi, and (60) Hingli.

The following varieties were grown in the production area as follows :—

	Acres.
Sumatra	3·00
Sumatra under Shade	1·00
Manilla	1·00
Motihari (for seed)	0·20

The crops were satisfactory, specially Sumatra Open and under shade. The crops are being cured.

Besides these, two trials were taken up this year with Deshi varieties—

(1) *Local method versus Farm standard method.*—Bhengi was grown in 0·40 acre with the two different methods of manurial treatments. The crop grown by the farm standard method was decidedly superior to that by the local method. The crop is being cured.

(2) *Selections from local collection.*—Deshi varieties from four typical localities well-known for tobacco, namely, Adaberi, Bashdaha, Chillakhal and Matukpur were grown with same treatment and cultural operations to see which of them grew best. Chillakhal Bhengi seemed to be the best in the field. The crop is being cured.

Cigarette tobacco (Harrison Special).—It has been observed since the last few years that the farm grown cigarette tobacco is much stronger than cigarette tobacco commonly met with in the market. Four different manurial treatments having different NPK ratios were tried to see if it would have any influence on the quality. P_2O_5 was made to vary from 2 to 6 times that of Nitrogen. Two of the treatments were suggested by the Imperial Leaf Tobacco Development Company, Calcutta. It should be noted that in all the 4 treatments the quantity of P_2O_5 was raised greatly in excess of the usual farm dose wherein Nitrogen used to predominate over P_2O_5. The area was previously green manured with a non-leguminous crop maize instead of sunnhemp. The leaves of all these four treatments seem to have cured better than before. Samples of flue cured leaves of all the treatments would be sent to the market for opinion and valuation.

Flue curing.—All together 5 charges were made with the leaves of Harrison Special only. The leaves cured to good yellow colour—the thinner leaves giving better colour. This year, an attempt was made to replace the steam coal by rahar stalks and stumps as fuel and it was found to be most hopeful. Only 5 maunds of coal were used per charge in place of 20 maunds previously used. The temperature of the barn could be regulated more easily with rahar fuel and it seemed that it would be possible to manage the flue curing of tobacco in future with rahar fuel alone. This would save a good deal of recurring expenditure.

Ensilage of Maize and Napier grass.—Altogether 2,014 maunds of maize and Napier grass were ensilaged for feed of cattle.

Farmyard manure.—Altogether 1,568 maunds of manure were prepared and applied to the crops.

Cultivation on economic basis.—Nil.

Cultivation on Borga system.—Nil.

Distribution of seed.—

Tobacco seeds	...	936 tolas.
Wheat seeds	...	13 maunds.
Maize seeds	...	4 maunds 1 seer.

Cattle.—The usual strength is 11 pairs of bullocks. One pair being old and unserviceable was sold off. It was replaced by a new young pair.

Practical training.—Two literate labourers were being given training in all practical operations of tobacco and other crops that are grown in the Farm.

Primary school.—There was a free primary school in the Farm which was started in 1929 with a view to impart general education with a little agricultural bias for the sons of the local cultivators. The students were given preliminary practical training in agriculture by actually growing seasonal crops by themselves in individual small plots allotted to them. But unfortunately the school was discontinued by the Government from last March 1941.

Visits and inspection.—During the year under report, the Farm was visited by the Director of Agriculture, Bengal, Deputy Director of Agriculture, Northern Circle, Live-Stock Expert, Bengal, Subdivisional Officer, Sadar, Circle Officer, Sadar, Raja Bahadur of Tajhat and others. The Agricultural Chemist, Bengal, paid several visits to this farm.

Acknowledgment.—The efficient and prompt discharge of duties of Babu Guru Pada Ganguli, Farm clerk, needs special mention.

GOSTA BEHARI PAL,

Agricultural Chemist to the Government of Bengal.

Financial Statement of the Government Tobacoo Farm, Rangpur, for the year 1940-41.

Debit. Heads of debit.	Amount of each sub-head.	Amount of each head.	*Credit.* Heads of credit.	Amount of each sub-head.	Amount of each head.
	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.
1. Sale-proceeds in hand at the commencement of the year.	Nil	....	1. Sale-proceeds in hand at the end of the year.	Nil	....
2. (*a*) Value of last year's farm produce in hand at the commencement of the year.	2,456 15 3	....	2. (*a*) Value of farm produce in stock for sale and farm use.	2,702 0 3	....
(*b*) Value of purchased stores and other raw materials of the previous year in stock at the commencement of the year.	1,246 4 3	3,703 3 6	(*b*) Value of purchased stores and other raw materials in stock at the end of the year.	1,162 10 3	3,864 10 6
3. Amount of outstanding bills payable by the farm at the end of the year.	Nil	....	3. Amount of outstanding bills payable by the farm at the commencement of the year.	Nil	....
4. Amount of unrealised sale-proceeds due to the farm at the commencement of the year.	Nil	....	4. Amount of unrealised sale-proceeds due to the farm at the end of the year.	Nil	....
5. Value of tools, plants and other agricultural implements at hand at the commencement of the year.	2,901 13 6	2,901 13 6	5. Value of tools, plants and other agricultural implements in hand at the end of the year (including live-stock).	2,867 9 9	2,867 9 9
6. Amount drawn from the treasury during the year—			6. Amount paid to the treasury during the year—		
(*a*) Pay and allowance of the staff ..	3,397 8 0	....	(*a*) Amount credited into the treasury	669 10 6	669 10 6
(*b*) Feed of cattle ..	409 10 0	....	(*b*) Value of stores, seeds, etc., supplied to other farms and departments within or outside the province by adjustment.	1,077 9 9	1,077 9 9
(*c*) Purchase of cattle ..	200 0 0	....			
(*d*) Seeds, manures and implements ..	648 15 6				
(*e*) Wages of labourers ..	3,508 14 9				
(*f*) Office expenditure and miscellaneous	1,088 12 0				
(*g*) Rents and taxes ..	22 0 0				
(*h*) Agricultural demonstration and propaganda.	155 12 6				
		9,431 8 9			
Cost of stores received from other farms within or outside the province.	44 5 3	44 5 3			
		16,080 15 0			8,479 8 6
duct—					
(*a*) Over-head charges ..	2,897 8 0				
(*b*) Allowance of Medical Officer ..	300 0 0				
(*c*) Non-cultivation charges—					
Clearing jungles and watchmen ..	493 0 0	3,690 8 0	*Excess* of expenditure over receipt, *i.e.*, loss ..		3,910 14 6
		12,390 7 0			12,390 7 0

Explanation for loss.—Abnormal low price of tobacco and other agricultural products.
N.B.—There being no economic area, the financial statement is given in the old form.

Annual Report of the Rangamati Farm for the year 1940-41.

1. **Area.**—Total area of the farm is 36·36 acres consisting 20·98 acres of hill and 15·38 acres of valley lands. This is distributed as below:—

Hill Area.—

	Acres.
Area under road and building	2·00
Area under cultivation	16·48
Steep slopes under pineapples and not available for field cropping	1·00
Area terraced during the year	0·75
Culturable waste land remaining to be terraced and brought under cultivation	0·75
Total ..	20·98

Valley Area.—

Area under cultivation	13·30
Area under roads, tank, drains	2·08
Total ..	15·38

Jume area.—An area of 3·25 acres at Sapchari was under different jume experiments.

2. **Season and rainfall.**—The rainfall figures are given below—

Rainfall.

Months.	Average normal fall.	Actual rainfall.	No. of rainy days.	Remarks regarding flood, if any.
1940.	Inches.	Inches.		
April	3·98	..	..	
May	10·80	11·20	12	
June	13·86	16·45	22	No flood.
July	18·54	13·22	28	Ditto.
August	17·73	15·37	24	Ditto.
September	11·64	18·39	19	Ditto.
October	6·45	5·67	7	
November	1·85	..	..	
December	0·44	0·85	1	
1941.				
January	0·55	..	..	
February	1·09	0·90	1	
March	2·76	..	..	
Total ..	89·69	82·05	114	

The rainfall was not favourable for the growth and yield of jume paddy though it was satisfactorily distributed for jume cotton. The season was also quite good for winter paddy and *rabi* crops.

3. **Establishment.**—Babu Nihar Kumar Gupta, District Agricultural Officer, held charge of the Farm throughout the year. He was assisted by one Agricultural Demonstrator and a clerk for Farm work, one Agricultural Demonstrator for conduction of jume experiments and four for demonstration and propaganda work in the district.

4. **Tours.**—The District Agricultural Officer was out on tours for 136 days during the year and the Agricultural Demonstrators toured 12 days on an average in a month.

5. **Operation during the year.**—This was classed as (A) Experimental cultivation, and (B) Non-experimental cultivation.

(A) *Experimental cultivation.*—(1) Research work on Comilla cotton was continued under the control of the Second Economic Botanist, Bengal. For this purpose an area of 2·11 acres of good terraces and Rs. 71-7-6 by way of supplying labourers and bullock from the Farm were contributed to the scheme. For further details about the work of the scheme a reference may be made to the report of the Second Economic Botanist, Bengal.

(2) *Jume experiments at Sapchari.*—The following experiments were conducted in the jumes at Sapchari hill which is 6 miles from the Farm:—

(*i*) Wet terrace cultivation.

(*ii*) Varietal test of Garo cotton and local cotton grown alone and grown mixed with paddy in the jume.

(*iii*) Varietal test of *aus* paddy in jume.

(*iv*) Strip cropping and juming in last year's jumed area.

The following crops were grown in the last year's jumed areas by strip cropping:—

(*a*) Garo cotton, local cotton and local jume paddy,

(*b*) Kaon,

(*c*) Job's tear,

(*d*) Rahar.

(*i*) *Wet terrace.*—Some terraces were made by the side of the streamlet. The cultural operations in these terraces were done by kodali. The streamlet was impounded above and a course of the water was directed into the irrigation channel which feeds the terraces. Puddling was done by kodali and Latisail paddy was transplanted in August. A dose of Nicifos at the rate of 2 maunds 20 seers per acre was applied.

Paddy grew excellently well though this was the first year but unfortunately one night the whole of it was grazed by some elephants when the crop was in ears.

From the next year it will be possible to grow double crops of paddy in these terraces (*aus* to be followed by *aman* paddy). Manuring may not be necessary as the water of the streamlet which comes down from the adjacent hill is laden with rich silt. Moreover these terraces being

at the foot of the side hill receive sufficient washings which also enrich them.

(*ii*) Garo cotton and local were grown as single crop and mixed with local jume paddy. The result of the test is given below—

Crops.	Area in acres.	Actual yield.	Yield per acre.	Value per acre.
		Md. sr. ch.	Md. sr. ch.	Rs. a. p.
Local cotton (alone) ..	·025	0 6 4	6 10 0	25 0 0
Garo cotton (alone) ..	·025	0 4 0	4 0 0	16 0 0
Local paddy	·025	0 10 0	10 0 0	16 4 0
Local cotton and paddy ..	·025	0 2 3 0 9 10	2 7 8 9 25 0	8 12 0 14 7 0
Garo cotton and paddy ..	·025	0 1 13 0 9 0	1 32 8 9 0 0	7 4 0 13 8 0

(*iii*) *Varietal test of aus paddy in jumes.*—Object is to find out earliest and yielding variety suitable for the jumes. Three departmental varieties and the local Gellong *aus* paddy were included in the test.

The result is given below—

Sown on 3rd June 1941. Area of sub-plot—1/16 of an acre.

Replications.

Variety.	Date of flowering.	1st.	2nd.	3rd.	4th.	5th.	Total.
		Sr. ch.	Sr. ch.	Sr. ch.	Sr. ch.	Sr. ch.	Sr. ch.
Marichbati ..	17-8-1940	5 0	2 2	4 0	2 0	3 11	16 13
D × L ..	10-8-1940	3 12	0 14	2 0	0 12	2 8	9 14
P × S(8) ..	17-8-1940	4 4	3 0	3 0	1 4	3 4	14 12
Gellong (Local variety).	28-8-1940	4 8	1 10	5 0	0 4	3 3	14 9

Average yield per acre.

	Md. sr. ch.
(1) Marichbati	5 2 8
(2) D × L	3 0 0
(3) P × S	4 16 0
(4) Gellong (Local)	4 20 0

The soil of the jume was very bad and nothing can be said unless this experiment is conducted for two years more.

(*iv*) *Strip cropping and juming in last year's jumed areas.*—Strip cropping is one of the most improved methods of crop production in hill slopes and one of the outstanding methods of erosion control. It can be used to protect large areas with long slopes which is generally cultivated as a unit and thereby exposed over their entire area to severe erosion by water. The strip cropping system breaks up the length of these slopes, prevents the destructiveness of soil and plant-food, and provides protection for the area at all times.

Contour strip cropping by making narrow strips of variable width were made and the following crops were grown in the beds with dense erosion control crops or soil binding crops in the border or ails as shown below—

Broad cost Gellong paddy for Soil errosion.	Gellong paddy.
Local cotton and Gellong paddy.	Garo cotton and Gellong paddy.
Local cotton.	Garo cotton.
	Kaon.
	Job's tear.

The yield of different crops obtained from these strips of beds is given below—

Variety.	Area in acres.	Actual yield.			Yield per acre.		
		Md.	sr.	ch.	Md.	sr.	ch.
Job's tear	·07	0	15	0	5	14	5
Kaon	·03	0	2	4	1	35	0
Garo cotton	·03	0	1	8	1	10	0
Garo cotton mixed with Gellong paddy ..	·03	0	1	5	1	3	12
		0	7	2	7	7	8
Gellong paddy	·01	0	7	4	18	5	0
Local cotton	·02	0	1	0	1	10	0
Gellong paddy mixed with local cotton ..	·01	0	4	8	11	10	0
		0	0	9	1	16	4
Broadcast Gellong paddy	·03	0	20	0	16	26	11

Test of Garo cotton and local cotton in farm terraces.—Garo cotton is grown in the jumes of Assam Hills and has very long bolls. This type of cotton also has a higher ginning percentage than the local type and fetches a better market value. These two varieties were, therefore, grown in the farm terraces as well to find out the suitability of the Garo

and how its yields compare with of the local variety. The result is given below—

Variety.	Area in acres.	Actual yield.			Yield per acre.		
		Md.	sr.	ch.	Md.	sr.	ch.
Garo cotton	·1	0	1	14	0	18	12
Local cotton	·08	0	9	2	2	34	1

The local type seems to be better for this locality and for the method of local cultivation. Garo requires a richer soil.

(B) *Non-experimental cultivation.*—The cropping in the non-experimental areas was done as follows:—

Kharif crops.

	Acres.
(1) *Aus* paddy—	
Hill area	3·73
Valley area	·83
(2) *Aman* paddy—Valley area	12·67
(3) Maize and Arhar—Hill area	·30
(4) Joar—Hill area	·50
(5) Cowpea—Hill area	1·50
(6) Sugarcane—Valley area	·27
(7) Napier grass—Hill area	1·15
(8) Vegetables	·25

Rabi crops in Hill area.

	Acres.
(1) Sonamung	1·94
(2) Mati Kalai	·54
(3) Mustard	·77
(4) Winter vegetables	·25
(5) Safflower	·02
(6) Tobacco	·059

(1) *Aus paddy.*—*Aus* paddy was grown for seed multiplication in an area of 3·73 acres of hill and ·83 of valley lands. The yields obtained from each variety together with the area under each are given below—

Hill Area—terraces.

Variety of paddy	Area in acres.	Actual. outturn.			Outturn acre.		
		Md.	sr.	ch.	Md.	sr.	ch.
Kataktara	2·91	61	4	0	21	1	0
Dharial	0·34	5	0	0	14	28	2
Gellong	0·34	3	0	0	8	33	0
Fulbadam	0·09	1	30	0	19	17	12
Valley area Kataktara	0·83	24	16	0	29	15	14

Outturn of *aus* paddy in the farm terraces and that in the jumes during the last four years are shown below with a view to compare results of different years—

Outturn of Paddy per acre.

Year.	In terraces.			In Jumes.			In Valley lands.		
	Md.	sr.	ch.	Md.	sr.	ch.	Md.	sr.	ch.
1937	23	2	8	11	22	8	16	20	0
1938	22	20	13	11	35	0	18	15	0
1939	22	3	0	6	35	0	15	25	0
1940	29	8	12	9	0	0	19	0	0

The above figures show that the yield in terraces is double or three times that of jume though these are cropped every year. The farm terraces are producing a better crop than the valley land even.

Double crop of paddy.—Kataktara *aus* paddy was sown broadcast in an area of ·83 acre in the valley land at this farm. After harvest of Kataktara Tilakachari *aman* paddy was transplanted. The following outturn was obtained.

Paddy.	Area in acres.	Actual yield.			Yield per acre. Grain.			Straw.		
		Md.	sr.	ch.	Md.	sr.	ch.	Md.	sr.	ch.
Kataktara	0·83	24	16	0	29	15	14	56	13	6
Tilakkachari	0·83	21	25	0	26	2	3	48	10	6

Double cropping of *aus* paddy and *aman* paddy can be done successfully in many parts of this district in the valleys and ravines. Demonstration on this line has been conducted in some centres.

(2) *Aman paddy.*—The area under transplanted *aman* paddy was 10·82 acres in the valley land. The outturn and the area under each variety are given below—

Variety of paddy.	Area in acres.	Actual yield.			Yield per acre.		
		Md.	sr.	ch.	Md.	sr.	ch.
Badkalamkati 65	2·20	47	25	0	21	26	0
Dadkhani	2·55	41	15	0	16	7	2
D × I (13)	0·43	5	20	0	13	0	0
Latisail	2·75	52	25	0	14	23	12
Tilakkachari	2·15	44	5	0	20	21	0
Bhashamanik	0·74	10	15	0	14	0	0

(3) *Maize and Arhar.*—Maize and Arhar were grown in pineapple area as shade crop. Maize was fed to farm bullocks and Arhar was left to grow to shade the pineapples during the period of drought.

(4) *Joar.*—Joar was grown in an area of 0·5 acre in the hill. An outturn of 250 maunds of green fodder was obtained.

(5) *Cowpea.*—Cowpea was grown in the orchard area, waste slopes and border lands as a cover crop with the object of checking the growth of undesirable weeds, protecting the soil from washing or leaching, increasing its fertility, improving its physical character and supplying other beneficial soil influences. In addition to all these a good green fodder of 199 maunds was obtained.

(6) *Sugarcane.*—Co. 213 sugarcane was grown in ·21 acre in the valley land; 8 maunds 5 seers 2 chittaks of Gur and 1,500 cuttings were obtained.

(7) *Napier grass.*—Napier grass has been planted in 1·15 acres of the ravine. Cuttings of Napier grass were also planted in the ails which have been constructed in the areas with mild gradient in order to bind the soil.

This grass served the purpose all right.

(8) *Vegetables.*—Olkachu was grown during the *kharif* season in ·07 acre and English vegetables, viz., cabbage, cauliflower, khol *rabi*, lettuce, etc., were grown in ·25 acre of terraces during winter. Rs. 27-5-6 was obtained by selling the vegetables.

Rabi Crops.

After harvest of *aus* paddy, sonamung, matikalai and mustard were grown in the terraces. Sonamung and matikalai grew all right but the terraces do not appear to be suitable for mustard as yet. Safflower was also grown in the tank bank and the crop appears to be suitable for the silted areas in this district.

Bananas and pineapples.—The waste hill slopes can be made profitable by the cultivation of bananas and pineapples but the dull market of the locality and the difficulties in the transport of agricultural commodities, specially perishable fruits are discouraging to the extension of the cultivation. Queen and Giant Kew pineapples and Amritasagar and Dudsagar bananas of the farm have attained the liking of the people. An amount of Rs. 29-10-3 was obtained from the sale of bananas and pineapples during the year.

Planting of pineapples was done horizontally according to the contour of the hill slope in order to stop the rolling down of the virgin surface soil and cajanus was grown in the area to create a semi shade condition. This process seems to be quite satisfactory.

Silage.—Silage was made with joar, maize, Napier grass and *aus* paddy straw; 350 maunds of silage was made and the farm cattle relished the same.

Cattle.—There were six pairs of bullocks at the Farm. One bullock died in February due to old age and by an attack of foot and mouth disease.

Practical training.—Two hill boys completed the course of one year's practical training at the Farm. A batch of hillmen was taken on a trip to the Naga Hills where they saw the extensive terrace system of cultivation, making of terraces by hillmen, making all beds of jume

crops horizontally in the hill slopes from the top to the foot of the hill, methods of dry terraces and wet terraces, etc. This trip has opened the eyes of some of the hillmen regarding the permanent settled cultivation in hill slopes.

Exhibition.—There was no exhibition in the district during the year.

Seed supply.—The seeds as shown in Appendix I were supplied from the Farm during the year.

Visits.—The Farm was visited by His Excellency the Governor of Assam, the Hon'ble Member, Board of Revenue, Bengal, the Divisional Commissioner, Chittagong, Assistant Director of Agriculture, Bengal, and many other Government officials and several non-official gentlemen. The Deputy Commissioner, Chittagong Hill Tracts, frequently visits the Farm and renders all help.

Acknowledgment.—The department is grateful to O. M. Martin, Esq., I.C.S., Divisional Commissioner, Chittagong, and Major G. L. Hyde, Deputy Commissioner, Chittagong Hill Tracts, for their valued instructions and assistance.

NIHAR KUMAR GUPTA,

District Agricultural Officer, Chittagong Hill Tracts.

APPENDIX I.

	Md.	sr.	ch.
Aman paddy (Departmental)—			
Latisail	58	28	4
Tilakkachary	49	13	4
Badkalamkati	41	32	8
Bhashamanik	19	27	12
Dadkhini	18	5	8
D × I (*Aman*)	12	2	12
Aus paddy (Departmental)—			
Kataktara	25	28	8
Dharial	32	0	0
Surajamukhi	0	29	2
Phulbadam	6	20	0
Local paddy—			
Gellong	1	10	0
Malay	1	29	10
Rangui	1	25	0
Kamrang	1	20	0
Turki	2	0	0
Groundnut	1	25	4
Rahar	2	4	8
Sugarcane cuttings	1,500 (in number).		
Pineapple suckers	733 ,,		
Plantain suckers	12 ,,		

Financial statement of the Rangamati Farm for 1940-41.

Serial No.	Head of debit.	Amount of each sub-head.	Amount of each head.	Serial No.	Head of credit.	Amount of each sub-head.	Amount of each head.
		Rs. a. p.	Rs. a. p.			Rs. a. p.	Rs. a. p.
1	Sale-proceeds at the commencement of year	..	..	1	Sale-proceeds in hand at the close of the year	Nil	Nil
2	(*a*) Value of last year's farm produces in stock at the commencement of the year.	888 13 6	..	2	(*a*) Value of farm produce in stock on 31st March 1941.	932 12 0	Nil
	(*b*) Value of purchased stores and other materials of previous year's stock at the commencement of the year.	154 8 0	1,043 5 6		(*b*) Value of purchased stores and other raw materials in stock on 31st March 1941.	169 6 0	1,102 2 0
3	Amount of outstanding bills payable by the farm at the end of the year.	Nil	Nil	3	Amount of outstanding bills payable by the Farm at the end of the year.	Nil	Nil
4	Amount of unrealised sale-proceeds due to the farm at the commencement of the year.	Nil	Nil	4	Amount of unrealised sale-proceeds due to the farm at the end of the year.	Nil	Nil
5	Value of tools, plants and other agricultural implements in hand at the commencement of the year.	3,124 6 3	3,124 6 3	5	Value of tools, plants and implements, etc., including live-stock and furniture at the end of the year.	2,982 4 9	2,982 4 9
6	Amount drawn from the Treasury during the year—				Amount paid to the Treasury during the year—		
	(*a*) Pay and allowance of establishment (pay and compensatory allowance—½ of District Agricultural Officer, one Agricultural Demonstrator and a Farm Clerk).	1,641 0 0			(*a*) Sale-proceeds credited to the Treasury	733 9 6	733 9 6
	(*b*) Feed of cattle	149 15 6			(*b*) Value of seeds and other stores supplied to other farms or seed stores within the province by book or stock transfer adjustment.	Nil	Nil
	(*c*) Purchase of seeds, manures and implements, etc.	248 12 9			*Excess* expenditure over the receipts ..	..	4,818 0 3 5,217 3 9
	(*d*) Petty construction and repairs ..	500 0 0					
	(*e*) Wages of labourer	3,199 15 9					
	(*f*) Office expenses and miscellaneous ..	949 3 9					
	(*g*) Reclamation	250 0 0	6,938 15 9				
			11,106 11 6				
	Deduction on account of petty construction, reclamation, Jume experiment and contribution to the Cotton Research Scheme, etc.	1,071 7 6	1,071 7 6				
	Grand Total ..		10,035 4 0		Grand Total ..		10,035 4 0

Annual Report of the work on Tobacco during 1940-41.

The season, though marked by almost total lack of rainfall since transplantation was on the whole not unfavourable for tobacco. At the early period of growth the crop suffered to a certain extent from want of moisture in the soil and drought took a heavy toll of plants at this stage, while there was also leaf curl. However with irrigation which had to be done more often than usual, the crop made a good recovery and the outturn was satisfactory. There was no trouble this year in raising seedlings in seed-beds as damage by damping off was quite negligible.

The following table of rainfall at the Tobacco Farm, Rangpur, would give an idea of the distribution of rain in the tobacco-growing area in North Bengal for the season 1940-41.

Month.	Actual rainfall (inches).	Number of rainy days.	Normal rainfall (inches).
1940.			
April	0·35	1	3·01
May	8·56	9	10·66
June	11·10	16	18·00
July	8·29	11	15·00
August	5·79	14	12·80
September	11·22	11	14·25
October	..	..	4·87
November	0·03	1	0·12
December	0·05	1	0·05
1941.			
January	0·13	1	0·50
February	0·40	2	0·50
March	0·12	1	1·25
	46·04	68	81·90

Acreage and Outturn.—The area under tobacco in the province i estimated at 321,800 acres as against 316,000 acres last year, whil the average outturn works out at 77 per cent. of the normal as agains 81 per cent. last year. Taking 986 lbs. as the normal yield of the cro per acre, the gross yield for the province for this year works out a 108,300 tons as against 127,200 tons last year.

The area under tobacco district by district is given below:—

Districts.	Area under tobacco (1940-41).
	Acres.
24-Parganas	500
Nadia	4,700
Murshidabad	1,300
Jessore	3,600
Khulna	2,100
Burdwan	200
Birbhum	..
Bankura	300
Midnapore	2,600
Hooghly	600
Howrah	100
Rajshahi	3,500
Dinajpore	13,000
Jalpaiguri	21,200
Darjeeling	400
Rangpur	202,600
Bogra	1,700
Pabna	5,600
Malda	6,000
Dacca	11,800
Mymensingh	18,300
Faridpur	5,700
Bakarganj	5,500
Chittagong	2,600
Tipperah	100
Noakhali	..
Chittagong Hill Tracts	4,000

Distribution of improved seeds.—The total supply of improved seeds under departmental supervision was 2,020 tolas—

	Matihari (seeds).	Bhengi (seeds).
	Tolas.	Tolas.
From Western Circle	664	..
From Northern Circle	94	..
From Eastern Circle	318	..
From Tobacco Farm, Rangpur	641	295
From Dacca Farm	8	..
Total	1,725	295

The demand of departmental Matihari seeds continued to be very heavy and the supply could not be done fully.

Variety trial (local collection).—Deshi varieties (Bhengi) raised from seeds collected from 4 different localities well-known for good quality tobacco, viz., Adbari, Bashdaha, Chillakhal and Matukpur, were tried against one another with the same cultural and manurial treatment at the Tobacco Farm, Rangpur (Farm Standard method). Bhengi from Chillakhal seemed to be the best both as regards outturn and quality.

Manurial trial.—Local Cultivator's Method versus Tobacco Farm Standard Methods.—Tobacco-growers apply raw cowdung amounting to 300—600 maunds per acre to the tobacco plot throughout the rains in small heaps evenly all over the area. The cowdung is mixed up with the soil at the time of preparation of the land. The application of this high dose of cowdung in the raw state is an universal practice. This was tried against the Farm Standard method wherein cowdung is applied in small dose in the rotted state. The actual applications were as follows:—

		Per acre.
Local method—		
Cowdung (raw)	..	300 maunds spread out in the field during the rains.
Mustard cake ..	..	9 maunds as top dressing.
Farm Standard method—		
Cowdung (rotted)	..	150 maunds applied at the time of preparation of the land.
Mustard cake ..	..	9 maunds applied about a week before transplantation.
Nicifos, I ..	..	50 lbs. as top dressing.
Potassium Sulphate	..	50 lbs. as top dressing.

Bhengi tobacco was tried.

The crop grown with the Farm Standard method was decidedly superior to the other.

Influence of different N:P ratios on cigarette tobacco (Harrison Special).—In the manurial application for cigarette tobacco at the Tobacco Farm, Rangpur, Nitrogen used to predominate over Phosphate. This was taken to be a possible cause for the low quality of the leaf tobacco. To rectify this and to devise a suitable standard for manuring 4 treatments having different N:P ratios were tried on a Virginia type tobacco—Harrison Special—in 0·25 acre each. Two of these treatments consisting entirely of artificial fertilisers were suggested by the Indian Leaf Tobacco Development Co., Ltd. The leaves were flue cured separately and samples were sent to the Imperial Council of Agricultural Research and Indian Leaf Tobacco Development Co., Ltd. for opinion and valuation. The leaves raised with all the 4 treatments seemed to have cured to a better finish than in previous years.

The actual manurial applications were as follows:—

Treatment No.	Particulars of manures.	Quantity per acre.	Approximate quantity in lbs. of.			Remarks.
			N_2	P_2O_5	K_2O	
1	Cowdung	50 mds.	16	12	..	N : P : K = 1 : 2·5 : 1·5.
	Nicifos (No. 1) ..	50 lbs.	7	20	..	
	Bonemeal	3 mds.	10	48	..	
	Potassium Sulphate ..	100 lbs.	..	..	50	
			33	80	50	
2	Cowdung	100 mds.	32	24	..	N : P : K = 1 : 2 : 2.
	Nicifos (No. 1) ..	25 lbs.	4	10	..	
	Superphosphate ..	100 lbs.	..	40	..	
	Potassium Sulphate ..	150 lbs.	..	..	75	
			36	74	75	
3	Nitrate of Potash ..	38 lbs.	4	..	15	Suggested by I. L. T. D.
	Nicifos (No. 1) ..	77 lbs.	10	30	..	N : P : K = 1 : 6 : 4.
	Dicalcid Phosphate ..	75 lbs.	..	30	..	
	Superphosphate ..	71 lbs.	..	30	..	
	Potassium Sulphate ..	89 lbs.	..	..	45	
			14	90	60	
4	Sulphate of Ammonia ..	25 lbs.	5	..	..	Suggested by I. L. T. D.
	Nicifos (No. 1) ..	54 lbs.	7	21	..	N : P : K = 1 : 4·5 : 3.
	Nitrate of Potash ..	62 lbs.	8	..	25	
	Superphosphate ..	67 lbs.	..	27	..	
	Dicalcid phosphate ..	114 lbs.	..	45	..	
	Potassium Sulphate ..	68 lbs.	..	..	35	
			20	93	60	

The approximate outturn of leaf tobacco per treatment was as follows:—

Treatment— Per 0·25 acre.	Mds.
No. 1	3·77
No. 2	3·00
No. 3	2·85
No. 4	3·95
Total ..	13·57

This tobacco has been quoted at 5 annas 6 pies per lb., by the Indian Leaf Tobacco Development Co., Ltd.

Trial of different varieties of tobacco.—Only deshi types of tobacco—Matihari and Bhengi—were tried in the district farms. At the Dacca Farm and the Tobacco Farm, Rangpur, 36 and 60 types of deshi and exotic tobacco for *hookah*, *bidi*, cigar and cigarette purposes were raised respectively not only for raising leaf tobacco but also for seeds for pure line culture. Sumatra leaf tobacco was raised in the open as well as under shade for production of fine wrapper leaves.

Cigar making.—All the exotic leaf tobacco raised last year at the Tobacco Farm, Rangpur, was sent to the Dacca Farm for the manufacture of handmade cigars. About 45 maunds of tobacco leaves were thus made into cigars. These cigars continued to be as popular as before. The sale proceeds amounted this year to Rs. 1,200-12-3 as against Rs. 1,517-0-9 last year.

Conclusion.—The market for Bhengi tobacco—the principal trade tobacco of North Bengal is very dull this year. There are no buyers from Burmah. Starting with Rs. 8 to Rs. 10 per maund this price has fallen down to Rs. 4 to Rs. 6 per maund. There does not seem to be much prospect for the improvement in price. It is now high time that the growers of Bhengi tobacco paid their attention to raising some other types of tobacco such as bidi or cigarette.

GOSTABEHARI PAL,

Agricultural Chemist to the Government of Bengal, Dacca.

Annual Report of the work on Sugarcane during 1940-41.

Weather condition.—The season on the whole was not a favourable one. The rainfall was much less than normal. (Rainfall during 1940-41; At Dacca 60·11″ as against 69·20″ normal, at Rangpur 46″ as against 81·90″ normal.)

The distribution was uneven. There were scanty showers in April followed by good showers in May and June when the canes made a good start, but in July rainfall was much below normal and this put a check to the growth of the crop. In August and September the rains were sufficient and quite helpful but scanty rains in October followed by a dry spell of weather from November onwards told heavily on the growth and the outturn was consequently far from satisfactory.

Pest and disease.—Heavy damage by insect pests specially stem-borers and the outbreak of red rot and wilt in an epidemic form in some parts of the province caused grave consternation to the growers in the affected localities.

Acreage and outturn.—The total area planted under cane has been estimated at 331,100 acres as against 315,800 acres last year. The average outturn of the crop has been put at 81 per cent. of the normal as against 84 per cent. last year.

Taking 540 maunds as the normal yield of sugarcane per acre the gross outturn for the province has been estimated at 5,320,000 tons this year as against 5,262,000 tons last year.

The area under cane district by district is as follows:—

District.	Area under sugarcane, 1940-41.
	Acres.
24-Parganas	2,500
Nadia	18,500
Murshidabad	9,500
Jessore	3,500
Khulna	900
Burdwan	10,600
Birbhum	8,900
Bankura	3,700
Midnapore	5,100
Hooghly	2,200
Howrah	2,800
Rajshahi	43,000
Dinajpore	51,000
Jalpaiguri	5,500
Darjeeling	200
Rangpur	24,800
Bogra	5,500
Pabna	5,300
Malda	3,700
Dacca	28,700
Mymensingh	39,500
Faridpur	10,200
Bakarganj	34,000
Chittagong	6,000
Tippera	2,600
Noakhali	1,800
Chittagong Hill Tracts	1,100
Total for Bengal	3,31,100

Supply of improved seeds (cuttings).—The demand for departmental seeds, (cuttings) continued to be heavy as before. The supply from the Dacca Farm alone amounted to 101,550 cuttings. Cuttings supplied under departmental supervision from the district farms and outside went up nearly to 8 lakhs. They consisted of the varieties—

Co. 213, Co. 371, Co. 527, Co. 508, Co. 331, Co. 421, Co. 281, B 6308, Dacca Gandari and Samsara.

The actual supplies from the districts were as follows:—

District.	No. of cuttings supplied.
Rangpur	21,700
Berhampore	21,500
Bankura	86,000
Jalpaiguri	6,100
Tippera	1,24,000
Hooghly	56,000
Mymensingh	1,40,000
Dinajpore	2,500
Faridpur	1,25,000
Bogra	1,90,000
Birbhum	4,500
Malda	12,000
Total	7,89,300

Varietal trial of promising canes at the Dacca Farm.—The varieties were divided into 3 groups:—

Early	Maturity in November and December.
Mid-season	January and February.
Late	March and April.

and grown in replicated plots 1/40th acre each and examined separately. The results of examination are summarised below. (See Table I.)

TABLE I.

Summary.

Yield in maunds of stripped canes—Average of 5 replications (1/40th acre each).

Early groups (5 varieties).

Average (maunds)—	Co. 518.	Co. 381.	Co. 281.	D. S. 35.	Co. 508.	Average.
Per plot ..	11·08	9·32	12·68	8·66	11·20	10·59
Per acre ..	443·2	372·8	507·2	346·4	448·0	423·6
Per cent. ..	104·63	88·01	119·74	81·78	105·76	100·00

Remarks.—Co. 281 is the best.

Mid-season group (7 varieties).

Average (maunds)—	Co. 326.	Co. 407.	Co. 313.	Co. 371.	Co. 529.	Co. 213.	Co. 511.	Average.
Per plot ..	18·45	15·01	17·27	19·12	15·28	17·16	16·02	16·90
Per acre ..	738·0	600·4	690·8	764·8	611·2	686·4	640·8	676·0
Per cent. ..	109·16	88·81	102·18	113·13	90·41	101·53	94·79	100·00

Remarks.—Co.371 is the heaviest yielder.

Late group (12 varieties).

Average (maunds)—	Co. 331.	Co. 443.	Co. 527.	Co. 386.	Co. 421.	Co. 411.	Co. 349.
Per plot ..	17 ·21	13 ·44	21 ·41	15 ·48	21 ·11	18 ·20	18 ·27
Per acre ..	688 ·4	537 ·6	856 ·4	619 ·2	844 ·4	728 ·0	730 ·8
Per cent. ..	96 ·85	75 ·63	120 ·48	87 ·11	118 ·80	102 ·42	102 ·81

Average (maunds)—	Co. 523.	Co. 444.	H. M. 607.	Co. 533.	Co. 419.	Average.
Per plot ..	22 ·14	16 ·13	16 ·31	18 ·14	15 ·43	17 ·77
Per acre ..	885 ·6	645 ·2	652 ·4	725 ·6	617 ·2	710 ·8
Per cent. ..	124 ·59	90 ·77	91 ·78	102 ·08	86 ·83	100 ·00

Remarks.—Co. 523, Co. 527 and Co. 421 are the heavy yielders.

Sugarcane Seedling Testing Station, Dacca Farm.—Thirty-two varieties including the standard cane Co. 213 and 11 new arrivals were under test during the year. These varieties were studied in detail under the following heads:—

(*i*) Germination—

(*a*) Percentage of germination;

(*b*) Rapidity in germination;

(*ii*) Field habit;

(*iii*) Growth performance;

(*iv*) Pest and disease;

(*v*) Quality of juice; and

(*vi*) Yield of cane and end products.

On the basis of these studies 8 varieties were selected for further trial.

Trial of varieties released from the Cane station at the district farms.—Eight varieties were altogether released. They consisted of 3 early and 5 mid-season and late types of canes—

Early—Co. 381, Co. 281 and Co. 508.

Mid-season and Late—Co. 213, Co. 331, Co. 421, Co. 407 and Co. 386.

Their trial was continued in the various district farms. The results are summarised below (Table II).

TABLE II.

Yield of Canes in the District Farms.

(Maunds per acre.)

Name of farms.	Early varieties.			Mid-season and late varieties.					Remarks.
	Co. 281.	Co. 381.	Co. 508.	Co. 213.	Co. 331.	Co. 421.	Co. 407.	Co. 386.	
Rajshahi ..	..	..	..	1,138·3	1,184·3	1,196·1	1,157·0	1,218·9	
Berhampore ..	..	..	..	675·2	902·5	767·5	593·7	727·0	
Dacca ..	507·2	377·6	447·8	686·2	688·2	844·4	600·4	619·0	The earlier selections Co. 421 and Co. 331 still continue to be better than the standard cane Co. 213. Amongst the early strains no cane has yet been found better than Co. 281.
Chinsurah ..	..	..	..	997·7	845·7	901·1	..	..	
Dinajpore ..	..	..	..	909·0	919·0	1,080·2	..	..	
Nadia ..	580·0	500·0	546·0	870·0	1,062·0	1,108·0	..	..	
Mainaguri ..	507·4	..	..	410·0	661·5	804·5	..	..	
Pabna ..	776·1	..	743·8	539·7	723·1	986·0	..	..	
Burdwan ..	..	..	..	..	727·5	607·5	..	..	
Rangpur ..	879·9	620·0	692·5	698·0	1,020·8	1,144·2	..	..	
Bankura ..	515·2	417·0	288·2	462·2	800·4	843·5	..	..	
Bogra ..	510·0	510·0	605·0	810·0	915·0	610·6	..	..	
Birbhum (Suri) ..	251·5	..	307·7	287·0	332·5	340·2	..	..	
Faridpur ..	909·7	616·9	871·5	934·5	768·0	1,074·0	..	..	
Malda ..	..	480·0	637·5	..	..	..	..	..	
Comilla ..	..	..	654·0	608·0	872·0	945·0	..	..	
Average ..	604·0	503·0	579·4	717·1	828·1	883·5	783·7	855·0	

Of the early canes Co. 281 continues to be the best yielder. Among the mid-season and late canes Co. 421 and Co. 331 are much superior to the standard cane Co. 213. Co. 421 and Co. 331 gave more than 1,000 maunds of stripped canes per acre in the following farms as noted against each :—

Co. 421—Rajshahi, Rangpur, Dinajpur, Faridpur and Nadia.

Co. 331—Rajshahi, Rangpur and Nadia.

As far as the district farms are concerned Rajshahi has topped the list giving more than 1,000 maunds of canes per acre for each of the following varieties tried :—Co. 213, Co. 331, Co. 421, Co. 407 and Co. 386.

New selections.—The last year's selection from the cane station Co. 527 did quite well at the Dacca Farm. It has been released this season to the district farms for further test. Two more promising canes have been found in Co. 523 and Co. 371. They are now being multiplied for distribution next year to the district farms.

Conclusion.—The area under sugarcane is steadily increasing. From a little less than 2 lakh acres in 1928-29 the area has now increased to nearly 3⅓ lakh acres. With the spread of cane cultivation, the control of pests and disease have become a problem of increasing importance in Bengal. The two common pests which do the most damage are stem-borers and top-borers. Pyrilla and White-fly are new pests which at times give rise to a certain amount of trouble. Of the fungus diseases *red rot* and *wilt* caused considerable damage this year and also last year in the districts of Birbhum, Dinajpur (Thakurgaon subdivision) and Murshidabad (Kandi subdivision). They have also been reported from other parts such as Faridpur, Nadia and Hooghly. Red rot is a very serious disease which makes the canes absolutely worthless for sugar and gur making.

A scheme is now pending before the Government for the control o red rot in Birbhum and other places where it has broken out in a epidemic form. With agricultural crops, curative measures are seldon remunerative. The best practice to get a clean and healthy crop is t plant good and healthy setts and to rogue out borer affected and disease canes at an early stage. The cultivators are therefore strongl advised to shake off their indifferent and careless attitude and to pa more attention to selection of setts, control of pests and diseases an the adoption of a better standard of cultivation. The Department Agriculture is always ready to render them help and give advi whenever they are in need.

GOSTABEHARI PAL,

Agricultural Chemist to the Government of Bengal, Dac

Annual Report of the Propaganda Officer, Department of Agriculture, Bengal, for the year 1940-41.

I. **Charge and establishment.**—There was frequent change in the charge of the office of the Propaganda Officer during the year as noted below:—

(1) Rai Bahadur Debendra Nath Mitra—1st to 15th April 1940.

(2) Babu Satindra Lal Sen Gupta—16th April to 10th June 1940.

(3) Babu Digendra Nath Banerji—14th June to 4th November 1940.

(4) Babu Nirmal Deb—5th November to 15th December 1940.

(5) Rai Bahadur Debendra Nath Mitra—16th to 31st December 1940.

(6) Babu Nirmal Deb—1st January 1941 to 31st March 1941.

During the interval of 11th to 13th June 1940, the charge was held by the Director of Agriculture, Bengal.

Ths establishment of the office consisted of only one clerk and one Film Operator. Maulvi Md. Tara Miah was the clerk and Babu Amalananda Kunda the Film Operator throughout the year.

II. **Tours.**—Owing to frequent change in the charge there was little touring by the Propaganda Officer. Only Babu Nirmal Deb spent 34 days on tour during his tenure.

The Film Operator was out on tour for 38 days in shooting films and also projecting films in Exhibitions.

III. **Work done during the year.**—(1) *Publication of "Krishi Katha"*.—"Krishi Katha", the bi-monthly journal of the department in simple and popular Bengali, continued to be published during the year which was the second year of its existence. Six issues were published covering 182 pages of printed matter of varied interest to the agriculturists. Of the six issues 1 was edited by Babu Satindra Lal Sen Gupta, 2 by Babu Digendra Nath Banerjee and 3 by Babu Nirmal Deb; 3,000 copies of each issue were published and nearly 2,700 were distributed free to officials and non-officials interested in agriculture and rural welfare.

(2) *Publication of coloured posters.*—Two new lithographed posters on cattle and poultry were published during the year bringing the total number of such posters to 32. A complete set of the posters was supplied to each and every exhibition held in the province during the year for display in the exhibitions.

(3) *Preparation of propaganda films.*—Shooting of 6,950 feet of films as detailed below on subjects relating to every section of the Department was done during the year:—

Section.	Subject of the film.	Length of the fil m in feet.
Live-Stock Expert ..	Dairy and Cattle-Breeding Section ..	100
Ditto ..	Cattle Shows in different districtas ..	300
Agricultural Chemist ..	Cultivation and manufacture of Tobacco ..	550
Ditto	Cultivation of Sugarcane	300
Assistant Fibre Expert ..	Cultivation of Jute	400
Ditto	Cultivation of Flax	400
Economic Botanist ..	Experiment on *Aus* paddy	400
Ditto	Experiment on *Aman* paddy	400
Ditto	Hybridisation of paddy	125
2nd Economic Botanist ..	Cultivation of Groundnut	200
Ditto	Cultivation of Linseed	175
Dacca Agricultural School	Works by the students	300
Dacca Farm	Preparation of Land	200
Ditto	Cultivation of *Aus* paddy	300
Ditto	Cultivation of *Aman* paddy	200
	Cultivation of Fodder crops	400
	Preparation of Silage	300
	Cultivation of English Vegetables ..	400
	Preparation of Artificial Farmyard manure ..	50
Malda Farm	Cultivation of Sugarcane and Cotton ..	50
Rangpur Farm ..	Cultivation of Sugarcane and Rahar ..	25
Mymensingh Farm ..	Cultivatoin of Sugarcane and Jute ..	25
Chittagong Hill Tracts ..	Terrace and Joom cultivation	400
Jessore Exhibition, 1941 ..	Agricultural Exhibits and demonstrations ..	100
Agricultural Engineer ..	Demonstration of mouldboard ploughs ..	300
	His Excellency the Governor of Bengal's visit to the—	
	Dacca Farm	100
	Faridpur Farm	125
	Mymensingh Farm	200
	Hon'ble Minister, Agriculture's visit to the Dacca Farm	25
	Football matches at Dacca and Mymensingh ..	100
	Total ..	6,950

(4) *Propaganda lectures and Cinema Shows.*—The Propaganda Officer attended several important Agricultural, Industrial and Health Exhibitions held in the Province during the year and delivered lectures on improvement of agriculture of the district in the lines recommended by the department and also gave shows of the propaganda films in them. A list of such Exhibitions is given below—

Setabganj (Dinajpur), Pabna, Jessore, Jalpesh (Jalpaiguri), Gopalpur (Rajshahi) and Chittagong.

(5) *Agricultural notes and news.*—Several agricultural notes and news were drawn up and submitted for publication in the Government Journal "Banglar Katha".

(6) *Revision of Departmental literature.*—Revision of the departmental literature in the light of the latest investigations and research was taken up towards the end of the year. A classified list of all the leaflets, pamphlets, bulletins, etc., was drawn up as a preliminary to the work and a scheme for revision framed. The actual revisional work will be done during the next year.

NIRMAL DEB,

Propaganda Officer, Department of Agriculture, Bengal.

First Annual Report of the Bengal Agricultural Institute, Dacca, for the year 1940-41.

Not a working report.—This report is of historical interest only and is a brief record of two facts. First, that it was in the financial year 1940-41 that the long required Bengal Agricultural Institute was staffed, equipped and got ready for opening the first classes in April 1941. Secondly, that the work had to be done under adverse circumstances.

Appointment of officers.—

Name.	Post.	Date of taking up duties.
Mr. W. M. Clark, M.B.E., B.Sc., I.A.S. ..	Principal ..	19-4-1940
Mr. S. C. Ray, B.A., (Cal.), B.Sc. (Hons.) (Wales)	1st Agronomist ..	18-9-1940
Mr. S. P. Sen Gura, B.Ag. (Bombay) ..	2nd Agronomist ..	19-4-1940
Mr. F. U. Ahmed, M.Sc. (Chem.), M.Sc. (Botany), M.A., (Agri.) (Economics), B.T.	Botanist ..	12-9-1940
Mr. B. C. Bagchi, B.E., (Cal.) ..	Surveyor and Assistant Engineer.	17-3-1941
Mr. T. C. Roy, M.Sc. (Cal.) ..	Mycological Assistant ..	29-3-1941
Mr. Md. A. Qaiyium, M.Sc. (Alig.) ..	Entomological Assistant ..	31-3-1941
Babu Nani Gopal Burman Ray ..	Assistant to Agriculturist ..	13-7-1940
Babu Bepin Chandra Deb ..	Assistant to Botanist ..	28-1-1941
Maulvi Md. Syed Hossain ..	Time and Store Keeper ..	5-11-1940

In addition to the above officers note also must be made of the following clerical officers:—

Babu Srish Chandra Roy, who came to the Institute on loan as Head Clerk from the office of the Deputy Director of Agriculture, Eastern Circle, started all the files and many of the registers and above all saw to it that we began our accounts records in the proper way. He was succeeded as permanent Head Clerk on the 24th July 1940 by Maulvi Malue Meah, B.A., and in accounts work by Babu Adinath Sen Gupta both of whom have done excellent work under the abnormal difficulties caused by the War and at the end of the year by the Dacca Riots. They would be the first to acknowledge however the help they derived from the work done by their predecessor. Two junior clerks were also appointed and worked well to get the Institute going.

Items of note during the year.—*The B.Ag. Course.*—Following preliminary agreement between Government and Dacca University, details of the B.Ag. Course which it had been decided to give after a B.Sc. of special type at Dacca University were worked out. These details were put up for discussion in an informal conference held in Calcutta on the 17th August 1940 and were passed substantially in their then form for publication in the Prospectus of the Institute.

Qualifications for entry.—Fourteen out of the twenty places to be open each year in the B.Ag. Course were reserved at an early date in the formulation of the scheme for graduates in the special B.Sc. Course at Dacca University in the Sciences most closely connected with Agriculture, but publication of the Prospectus had to be held up pending

decision on the qualifications necessary to secure one of the remaining six vacancies. This matter was finally cleared up at the above-noted conference which was presided over by the Hon'ble Minister, Mr. Tamizuddin Khan at which were present members of the Legislature, and representatives from Dacca University, the Agricultural, Veterinary and Education Departments assisted by the existing and a former Secretary of the Agriculture and Industries Department.

The Prospectus was received from the Government Printing Press in the month of November 1940, but admission forms could not be got until the 31st March 1941.

Work on the building.—Fortunately the materials for the building had mostly come forward or been arranged for by the time War broke out. Progress was satisfactory and the officers of the Communications and Works Department need to be thanked for the obliging way in which they carried out the many alterations of detail requested of them in the course of the erection.

Certain major alterations could not be effected but the blame for these lay not on any officer, but on the unfortunate circumstance that the Principal could not be appointed many months earlier while alteration was still possible. For modern two-student benches and the windows are too small for the work to be done in the laboratory. The quality of the work done is high.

The War caused much delay and dislocation of the electrical work and while current was obtained on the 28th March 1941 on motor or any of the machinery for the barn or for the Engineering Section had been installed by that date and lack of these is going to hold up work and teaching in the coming year. Among other items not secured within the year were the motor and pump for the tube-well and it was necessary to install a, not very satisfactory, temporary oil engine and pump.

Equipping of the various sections.—Lack of an Engineer member of the staff was a handicap all along and much credit is due to Mr. H. C. E. Peterson, Agricultural Engineer, Bengal, for the willing help given by him although busy in any case with his normal work.

Furniture was comparatively easy to get except that all final orders remained unfulfilled due to the Dacca Riots which came in the final fortnight of the year. Scientific apparatus was difficult to get as also were books, but the outstanding difficulties were met with over equipment for the Engineering Section some items of which, when at last secured, where taken away as necessary for War purposes. In practically all cases and over every section it was impossible to secure a firm price which made planning of expenditure a constant occupation.

As a final note on equipment it should be noted that bullocks were secured only on the 7th March. All of the 13 pairs it was possible to secure are young (about 4 years) and untrained. It will be possible to give them only light work for the first two or three years.

The overcoming of the succession of difficulties was, in itself, not uninteresting and is recorded merely as matter of historical interest for the writer of a possible centenary or other dated publication.

W. M. CLARK,

Principal,

Bengal Agricultural Institute

Glossary.

Afghani ..	.. A type of winter rice "Oryza sativa" harvested in November.
Anna ..	.. Indian coin, 1-16th of a rupee or 1 and 1-8th pence.
Aman ..	.. The winter paddy crop.
Arhar or rahar	.. The pigeon pea "Cajanus indicus," a pulse crop.
Aus ..	.. The autumn paddy crop.
Ails ..	.. Turfed boundaries between fields.
Bhutta ..	.. Maize "Zea Mays ;" grown both for grain and as a fodder crop.
Bhut ..	.. Gram "Cicer arietinum ;" a pulse crop.
Bheel or bhil	.. Natural depressions, generally old beds of silted up rivers which serve as reserviors of flood water during the rains.
Bigha ..	.. Land measures, size varies but is, generally speaking, ⅓rd of an acre in Bengal.
Boro ..	.. A paddy crop grown in the cold weather or rabi season.
Bogi jute ..	.. Local name in eastern districts for "Corchorus Olitorious," a species of jute which will not stand water-logging.
Buri ..	.. A variety of cotton "Gossypium sp."
Barela ..	.. "Sida rhombifolia"; a fibre plant.
Bydes ..	.. Low lands in Madhupur jungle due to erosion.
Borbati ..	.. Cowpea "Vigna Catiang ;" a leguminous fodder and green manure crop.
Chenna ..	.. Gram "Cicer arietinum ;" a pulse crop.
Chata Kambu	.. Paharia name for mulberry "Morus Spp."
Colu ..	.. "Imperata sp.," a fodder grass.
Chittak ..	.. Weight measure ; 1-16th of a seer or 2 and 2-35th oz. Land measure ; 1-16th of a cottah or roughly 5 square yards.
Cholrosis ..	.. Whitening of leaves of plants—actual cause not identified.
Court of Wards' Estates	Private or zamindari estates under the management of the Board of Revenue.
Dharwar ..	.. A variety of cotton "Gossypium hirsutum".
Dhaincha ..	.. "Sesbania aculeata ;" a leguminous plant grown for fibre and as a green manure.
Deshi ..	.. Local or indigenous.
Daisee ..	.. Trade name for crops of "Corchorus Olitorious" grown in Central Bengal.
Dhan ..	.. Paddy "Oryza sativa".
Date gur ..	.. Crude brown sugar obtained by boiling the down juice procured by tapping the date-palm "Poenix-sylvestris."
Gur ..	.. Crude brown sugar still containing molasses.
Gangajali ..	.. A variety of wheat "Triticum sativum."

Gram	The Egyptian pea "Cicer Arietinum."
Hat	Local market.
Jute	A fibre plant "Corchorus Spp." Two species grown in Bengal "Corchorus capsularis" which is not affected by water-logging and "Corchorus Olitorious" which only suits high land.

Varieties.		*Departmental races.*	
C.C.	.. C.O.	.. C.C.	.. C.O.
Burra pat	.. Dacca Deo ..	K. B.	.. C.G.
Fundak	.. Hooghly Desi	D. 154	.. R. 26.
Kakya Bombai		.. D. 89.	
Simulkandi	..	.. D. 27.	
		R. 85.	

Japanese Millet ..	"Pennisetum typhoideum," a fodder crop.
Juar	Sorghum "Andropogon Sorghum;" a millet grown both for fodder and grain.
Kala Dagi ..	Black spot disease of jute due to "Rhizoc tonia Sp."
Kalai	"Phaseolus Mungo", a pulse crop.
Kasch	A poisonous substance found in the coastal area of Chittagong due to which a large part of the coastal area is going out of cultivation. This has been found to be associated with the existence of vegetable matter at various stages of decomposition in various depths.
Kharif	The rainy season.
Khas Mahal Estates ..	Temporarily-settled proprietary estates, which are under the direct management of Government, as well as estates owned by Government.
Kottah	Land measure; 1-20th of a bigha or roughly 81 square yards.
Khesari ..	"Lathyrus sativus," a pulse crop grown both for grain and fodder.
Kapas	Raw cotton before extracting the seed.
Ketli	"Agave Spp.;" fibre plants.
Masuri	Lentil "Ervum ins;" a pulse crop grain.
Matar	Field pea "pisum sativum;" a pulse grown both for grain and as a fodder crop.
Mung	"Phaseolus radiatus;" a pulse grown for grain.
Marua	"Eleusine Coracana;" a small millet grown for grain.
Mela	A fair.
Maund	A measure of weight; 40 seers or 82 and 2-7th lbs.
Mashyem Kalai ..	"Phaseolus calcaratus;" a pulse grown for grain, as a fodder crop and as a green manure.
Matikalai ..	"Phaseolus Mungo;" a pulse crop grown for grain.
Natal grass ..	"Tricholaona rosoa;" a fodder grass.
Napier grass ..	"Pennisetum purpureum," a fodder grass.

Phapar .. .. Buckwheat "Fagopyrum esculentum ;" grown as a grain crop in the Hills.

Pat .. .. Jute "Corchorus Spp."

Pretoria grass "Panicium Sp." ; a fodder grass.

Paddy .. .. Rice "Oryza sativa ;" the main cereal crop of Bengal.

Varieties.

Badshabhog ..	Elai ..	Panisail.
Bhadkalamati ..	Gangajali ..	Puki.
Bhutmuri ..	Gazia ..	Sonamail.
Chapalo ..	Indrasail ..	Surjamukhi.
Charnak ..	Jhingasail ..	Ramtulsi.
Dudkhani ..	Kataktara ..	Ramtomarsi.
Dhansi ..	Kataribhog ..	Tilakachari.
Dhepi ..	Mansira ..	Timurary.
Digha ..	Marichabeti ..	Touli.
Dudsar ..	Nagra. ..	

Pie .. .. Indian coin 1-12th of anna.

Pice .. .. Indian coin 3 pies, roughly a farthing.

Rahar .. .. The Pigeon pea "Gajanus indicus ;" a pulse grown for gram, the same as Arhar.

Rupee .. Standard Indian Silver coin valued 1*s*. 6*d*.

Rai .. .. Mustard "Brassica juncea," an oil-seed.

Reri .. .. Castor oil plant "Ricinus comunis ;" oil-seed.

Reana .. .. "Reana luxurians ;" a fodder crop.

Rhea .. .. }
Ramie .. .. } China grass "Boehmerianivea ;" a fibre plant.

Rabi .. .. The cold weather season.

Soy .. .. Soya bean "Glycine Soa"; a pulse rich in oil.

Sunn or Sannai .. Sunn or Indian hemp "Crotalaria juncea ;" a fibre plant.

Seer .. .. A measure of weight ; 2 and 2-35th lbs.

Sugarcane .. "Saccharum officinarum."

Varieties.	*Departmental races.*
Gandari ..	.. Co. 213.
Khagri ..	.. Yellow Tanna.
Kheri.	
Shamshara.	
Vendamukhi.	

Sudan grass	..	"Nolens Sudalensis," a fodder grass.
Tak ..	..	High lands in Madhupur jungle tract.
Tori ..	..	Rape "Brassica Napus var, dichotoma ;" an oil-seed.
Tur or Tunt	..	Mulberry "Morus Spp."
Til ..	..	Gingelly "Sesamum indicum ;" an oil-seed.
Tisi ..	..	Linseed "Linum usitatissimum ;" an oil-seed.
Tola ..	..	A measure of weight ; 2-5th oz., roughly.
Tamac ..	..	Tobacco "Nicotiana Spp.," two species grown in Bengal "Nicotiana Tabacum" and "Nicotiana rustica."

Varieties.

N. Tabacum	.. ..	N. Rustica.
Bhengi	.. ..	Bilaita.
Havana	.. ..	Matihari.
Naokhol.		
Orinoco.		
Ohio.		
Pennsylvanian.		
Sumatra.		
Thotnompatty.		
White Barley.		
Manilla.		

Tosha ..	..	Trade name for "Corchorus Olitorious" jute from Pabna and Rajshahi districts.
Ufra ..	..	A disease of rice caused by an eel worm "Tylenchus sp."

B. G. Press—1941-42—[illegible]